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FINAL

Environmental Assessment
and
Finding of No Significant Impact

Military Family Housing Privatization

Prepared for:

Department of the Air Force
Air Education and Training Command
Vance Air Force Base, Oklahoma

Prepared by:

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January 2006

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JAN 2006		**00-00-2006 to 00-00-2006**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Final Environmental Assessment and Finding of No Significant Impact: Military Family Housing Privatization	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **URS Corporation,P.O. Box 201088,Austin,TX,78729**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The United States Air Force (Air Force) proposes to privatize MFH in order to provide a feasible way to accelerate housing improvements to (1) provide adequate housing for military families, and (2) achieve the objectives of the Office of the Secretary of Defense (OSD) Planning Guidance. The OSD Planning Guidance requires all Services to "revitalize, divest through privatization, or demolish inadequate housing on or before 2010." Vance AFB has 230 MFH units located on the installation, which is one more unit than the Housing Requirements and Marketing Analysis (HRMA) requirement of 229 units. Of the 230 units, 54 were demolished in 2004 and replacements are completing construction. The remaining 176 units were constructed in the late 1950s, early 1960s, and are considered inadequate. Sufficient Military Construction (MILCON) funding is not available for the necessary renovation of these 176 units. Due to the scope of renovations that would be required renovation costs are projected to exceed 70% of replacement costs. Air Force guidelines prohibit renovation if renovation costs exceed 70% of replacement costs. Based on an in-depth analysis of the housing requirements and needs at Vance AFB, AETC determined that privatization of MFH would be the most cost-effective and efficient means to provide adequate housing for military families. The following biophysical resources were identified for study in this EA: noise, air quality, earth resources, water resources, infrastructure and utilities, hazardous materials and wastes, biological resources, cultural resources, land use, and socioeconomic resources. The Proposed Action would have no impact on land use, minority or low-income communities, cultural resources hazardous materials usage, wastewater generation, potable water usage, and electricity and natural gas consumption. There would be minimal short-term impacts to air quality, hazardous and solid waste generation, drainage, traffic counts and transportation infrastructure, earth resources, surface water resources, and biological resources. There would be positive impacts to noise and socioeconomic resources.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**176**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

FINDING OF NO SIGNIFICANT IMPACT

FINAL ENVIRONMENTAL ASSESSMENT
MILITARY FAMILY HOUSING PRIVATIZATION

VANCE AIR FORCE BASE, OKLAHOMA

AGENCY: Air Education and Training Command (AETC), Vance Air Force Base (AFB), Oklahoma.

BACKGROUND: The current number of Military Family Housing (MFH) units at Vance AFB is 230 units, one more than the Housing Requirements and Market Analysis (HRMA) requirement of 229 units. At the time the Office of the Secretary of Defense (OSD) Guidance to upgrade inadequate housing was published, all of the housing units at Vance were approaching 40 years old. To address the OSD directive, Vance AFB developed a plan to replace all MFH units in multiple phases. The purpose of implementing a phased approach was to minimize displacement of military families while improvements were being made as well as to address the most inadequate units first.

Phase I of the plan included demolition and replacement of 54 units located in the northeastern corner of the housing area (see Figure 2-1). Based on an economic analysis conducted by the Vance AFB Facilities Management Office in 2002 and an EA completed in 2003, demolition and replacement was determined to be the most effective method for bringing the Phase I units up to Air Force standards (USAF, 2003a). Based on this determination, 54 units were demolished in 2004 and currently are being rebuilt using Military Construction (MILCON) funding. Although those 54 units were built to modern standards, as of 2005, 176 inadequate units remain.

Since the 2002 decision to demolish and reconstruct the previously discussed 54 units, AETC has completed an in-depth analysis of the housing requirements and needs at Vance AFB and determined that privatization is the most cost-effective investment option for Vance AFB to meet its MFH requirements consistent with Congressional and OSD constraints and directives. Therefore, the original plan to upgrade the MFH units in three phases was superseded by the recommendation to privatize. The Proposed Action to convey 230 units, demolish 176 inadequate units, and construct 175 new units to meet the HRMA of 229 units was developed based on AETC's analysis.

Pursuant to National Environmental Policy Act guidance, Title 32 Code of Federal Regulations (CFR) Part 989, and other applicable federal and local regulations, the Air Force has conducted an assessment of the potential environmental consequences of MFH privatization at Vance AFB, Oklahoma.

PROPOSED ACTION: The proposed action is to convey 230 housing units to a privatization contractor for development, operation, and maintenance over a 50-year period. The Government would retain ownership of the underlying land and lease it to the private developer. The existing housing inventory includes the 54 newly constructed MFH units and 176 existing units that do not currently meet Air Force housing standards. It is expected that the privatization contractor will demolish the 176 existing inadequate units and construct 175 new housing units to meet the HRMA of 229 units.

SUMMARY OF FINDINGS: The potential environmental effects of the proposed action were assessed for the following resources: noise, air quality, earth resources, water resources, infrastructure and utilities, hazardous materials and wastes, biological resources, cultural resources, land use, and socioeconomic resources. Potential impacts of the Proposed Action to each environmental resource are summarized below.

Noise. The primary source of noise at Vance AFB would continue to be from aircraft operations; however, there could be periods of time during which demolition and construction noise could be discerned and create a minor annoyance to on-base personnel. This condition would occur when construction activity is underway and flying activity is low. After completion of the demolition and construction activities, there would be no change in existing noise levels. The existing park is mostly within the 70 DNL noise zone. The new parks would be located within the 65 DNL noise zone. Therefore, there would be a slight reduction in noise levels for MFH residents who access the parks for recreational use. However, the homes that are to be constructed in the current park would be located in a higher noise zone (70 DNL) than the current inadequate units (65-69 DNL). The installation of sound proofing equipment at these new residences will minimize the interior noise levels in these units so that interior noise levels over the long term would be less than those in the existing inadequate units. Overall, noise impacts associated with the Proposed Action would be negligible. Therefore, the Proposed Action would not produce any long-term impacts to the existing noise environment.

Land Use. No adverse impacts would be anticipated. With the exception of the existing park, which would be demolished to make room for newly constructed MFH units, there would be no change in current land use. Although the park would be converted from residential recreational use in residential use, smaller playground areas would be constructed throughout the newly developed housing area so that resident children would continue to have access to parks and recreation in the MFH area.

Air Quality. Heavy equipment exhaust and fugitive dust emissions from demolition and construction activities would slightly increase short-term criteria pollutant ambient air concentrations. The Proposed Action would result in short-term minor impacts to regional air quality. However, the increases would be minimal (less than 0.6 percent increase for any criteria pollutant) when compared to the air emissions baseline for Air Quality Control Region (AQCR) No. 185. Furthermore, the effects would be temporary, would diminish rapidly with distance from the proposed demolition and construction sites, and would not result in any long-term impacts.

Socioeconomic Resources. Short-term beneficial impacts would be anticipated. Short-term beneficial impacts on regional socioeconomics would occur during construction activities at Vance AFB. However, no long-term benefits would occur and there would be no changes in socioeconomic patterns or trends.

Environmental Justice. Based on the United States (U.S.) Census data, the proposed project is not located in an environmental justice area of concern. Therefore, there is no potential for the proposed project to have disproportionately high and adverse effects on minority or low-income populations.

Cultural Resources. The location of proposed demolition and construction activities is in an area that has been previously disturbed. Furthermore, no historic architectural or archaeological resources are located in this area. No adverse impacts would be anticipated.

Hazardous Materials and Wastes. The amount of hazardous materials used and the amount of hazardous waste generated would be expected to remain as they are currently. The contractor would be responsible for handling any hazardous waste generated as a result of the proposed demolition and construction activities in accordance with applicable federal, state, and Air Force regulations. No MFH units and associated infrastructure would be constructed on an Installation Restoration Program (IRP) site. Asbestos-containing materials (ACM) and lead-based paint (LBP) are expected to be encountered during building demolition. The demolition contractor will be responsible for complying with relevant health and safety, and disposal regulations. The soil under and immediately surrounding the MFH units may contain pesticide contaminants, including chlordane and creosote. The construction contractor would be responsible for minimizing the disturbance of soil during demolition and construction activities. Before the MFH units are occupied, the contractor would be responsible for ensuring that representative sampling of the soils be conducted to determine the level of contamination and that appropriate actions be taken.

Infrastructure/Utilities. Electricity and natural gas usage would likely increase due to the larger size of the new MFH units. However, this increase would be offset by improved heating and air conditioning efficiencies resulting from installation and operation of new equipment. The number of vehicles entering and exiting the Base each day, as well as the on-base volume of traffic, would be expected to temporarily increase due to an increase in the number of vehicles required for demolition and construction activities. An increase in the number of heavy loads that would be expected from construction equipment and roll-off dumpsters as a result of the Proposed Action would temporarily adversely affect existing road surface conditions during the construction phase of the project. Repair of small roadway sections may be required following completion of demolition and construction activities. Construction and demolition debris requiring disposal at the landfill would total approximately 12,410 tons over the duration of the project. Assuming that demolition and construction would be completed in five years, the annual increase is estimated to be 2,482 tons per year, increasing the total expected solid waste disposal from Vance AFB for the first five years of the project to 5,346 tons per year. This amount is nearly double the current generation of waste at Vance AFB, but is substantially less than the 1.6 million tons of existing disposal capacity at the City of Enid

Landfill. Water consumption, and solid waste and wastewater generation would remain the same. Erosion and stormwater runoff would be controlled through adherence to best management practices described in a Stormwater Pollution Prevention Plan (SWPPP). Although there would be an increase in impervious surface area, the increase would be negligible and drainage patterns would not change.

Earth Resources. Minimal short-term impacts would be anticipated. However, construction activities at Vance AFB would occur within areas where the physiography, geology, and soils previously have been disturbed and modified prior to building construction. Implementation of best management practices during construction would reduce the potential for erosion.

Water Resources. Additional water usage would be required during construction as a fugitive dust control measure. The quantity necessary would be minimal and no adverse impact is anticipated. Furthermore, the Proposed Action would result in no net increase in personnel or number of residents; therefore, no additional water consumption is expected. None of the proposed construction would occur in a floodplain. Use of best management practices during construction would reduce the potential for sedimentation to enter receiving bodies of water. No impacts to groundwater would occur because excavation for new home construction is not expected to reach the water table, which is over 6 feet below ground surface (bgs).

Biological Resources. The proposed demolition and construction activities would occur on previously disturbed areas within developed regions of the Base. No federally or state-listed endangered, threatened, or special status species are known to occur within a 50-mile radius of Vance AFB. No construction activities would occur in or near wetlands.

MAXIMUM DEVELOPMENT ALTERNATIVE: The Maximum Development Alternative is to convey 230 units, demolish 230 units, and construct 422 new units. This alternative assumes that a maximum of six units per acre can be constructed on 80% of the acreage to be conveyed, and the remaining 20% is used for roads, sidewalks, playground areas, tot lots, and green space.

NO ACTION ALTERNATIVE: Under the No Action Alternative, Vance AFB would continue to provide for the housing needs of Base personnel through traditional MILCON funding. The Air Force would demolish one unit to meet the HRMA end-state of 229 units. The remaining existing 175 inadequate units would continue to degrade, and Air Force members and their families would continue to live in substandard housing. In addition, there would be substantial inequities between the 54 newly constructed homes that have a minimum square footage of 1,760 square feet and the 175 existing remaining inadequate homes where the average square footage is 1,200 square feet. Furthermore, Vance AFB would not be in compliance with the OSD 2010 directive.

ALTERNATIVES ELIMINATED FROM FURTHER DISCUSSION: Two alternatives to the Proposed Action were initially considered but ultimately eliminated from further consideration. Both of these alternatives must meet the HRMA of 229 units, and therefore, would involve demolition of one unit. Privatization and subsequent renovation of the 175 inadequate units was

one of the two alternatives considered. Due to the scope of renovations that would be required to bring the units up to Air Force standards, renovation costs are projected to exceed 70% of replacement costs. Air Force guidelines do not allow renovations if the cost exceeds 70% of replacement costs. In addition, although this alternative would upgrade the interior of the MFH units to modern standards, the square footage would remain below Air Force standards. Adding on to the existing units would address the square footage issue. However, this approach would reduce the amount of space between housing units, which would have a negative impact on the neighborhood.

Vance AFB also considered renovation and/or demolition and construction using MILCON funding. However, as stated above, renovation is not a viable alternative given the costs and square footage requirements. In addition, sufficient MILCON funding will not be available to demolish 176 inadequate units and reconstruct 175 new units in a timely manner.

SUMMARY OF CUMULATIVE IMPACTS: The cumulative impact of implementing this Proposed Action along with other past, present, and future projects at Vance AFB and the surrounding community were assessed. No significant cumulative impacts were identified.

DECISION: Based on my review of the facts and analysis contained in this environmental assessment, which are incorporated herein, I conclude that the implementation of the Proposed Action will not have a significant impact either by itself or considering cumulative impacts. Accordingly, the requirements of the National Environmental Policy Act, regulations promulgated by the President's Council on Environmental Quality, and Air Force Instruction 32- 7061 are fulfilled and an environmental impact statement is not required.

Colonel Bryan J. Benson
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

Date: 8 Feb 2006

FINAL

Environmental Assessment

Military Family Housing Privatization

January 2006

COVER SHEET

Responsible Agency: Air Education and Training Command (AETC), Vance Air Force Base (AFB), Oklahoma (OK)

Proposed Action: Privatize Military Family Housing (MFH) at Vance AFB, Garfield County, Oklahoma.

Point of Contact: Mr. Mark Buthman, Dyn CEV, 140 Channel Street, Suite 231, Vance AFB, OK 73705-5623, (580) 213-7344.

Report Designation: Environmental Assessment (EA)

Abstract: The United States Air Force (Air Force) proposes to privatize MFH in order to provide a feasible way to accelerate housing improvements to (1) provide adequate housing for military families, and (2) achieve the objectives of the Office of the Secretary of Defense (OSD) Planning Guidance. The OSD Planning Guidance requires all Services to "revitalize, divest through privatization, or demolish inadequate housing on or before 2010."

Vance AFB has 230 MFH units located on the installation, which is one more unit than the Housing Requirements and Marketing Analysis (HRMA) requirement of 229 units. Of the 230 units, 54 were demolished in 2004 and replacements are completing construction. The remaining 176 units were constructed in the late 1950s, early 1960s, and are considered inadequate. Sufficient Military Construction (MILCON) funding is not available for the necessary renovation of these 176 units. Due to the scope of renovations that would be required, renovation costs are projected to exceed 70% of replacement costs. Air Force guidelines prohibit renovation if renovation costs exceed 70% of replacement costs. Based on an in-depth analysis of the housing requirements and needs at Vance AFB, AETC determined that privatization of MFH would be the most cost-effective and efficient means to provide adequate housing for military families.

The following biophysical resources were identified for study in this EA: noise, air quality, earth resources, water resources, infrastructure and utilities, hazardous materials and wastes, biological resources, cultural resources, land use, and socioeconomic resources. The Proposed Action would have no impact on land use, minority or low-income communities, cultural resources, hazardous materials usage, wastewater generation, potable water usage, and electricity and natural gas consumption. There would be minimal short-term impacts to air quality, hazardous and solid waste generation, drainage, traffic counts and transportation infrastructure, earth resources, surface water resources, and biological resources. There would be positive impacts to noise and socioeconomic resources.

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ACRONYMS AND ABBREVIATIONS

AAF	Auxiliary Air Field
ACHP	American Council on Historic Preservation
ACM	asbestos containing material
AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AIRFA	American Indian Religious Freedom Act
AMP	Asbestos Management Plan
AOP	Asbestos Operating Plan
AQCR	Air Quality Control Region
ARPA	Archaeological Resources Protection Act
ASR	Asbestos Survey Report
AST	aboveground storage tank
AWWA	American Water Works Association
bgs	below ground surface
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEV	Environmental Flight
CFR	Code of Federal Regulations
CO	carbon monoxide
COC	community of comparison
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
CY	Calendar Year
dB	Decibel
dBA	A-weighted Decibel
DoD	Department of Defense
DNL	Day-Night Average Noise Level
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EDR	Environmental Data Resources, Inc.
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EPCRA	Emergency Planning and Community Right to Know Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FHMP	Family Housing Master Plan

FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FTW	Flying Training Wing
FY	Fiscal Year
GSF	gross square feet
H_z	Hertz
HABS	Historic American Building Survey
HAZMAT	Hazardous Material
HRMA	Housing Resource Market Analysis
HQ AETC	Headquarters Air Education and Training Command
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IRMP	Integrated Resources Management Plan
IRP	Installation Restoration Program
KWH	kilowatt hours
LBP	Lead Based Paint
LBPPPA	Lead Based Paint Poisoning Prevention Act
lbs/sf	pounds per square foot
L_p	sound pressure level
Leq	Equivalent Sound Level
mcf	million cubic feet
MCL	maximum contaminant level
MILCON	Military Construction
MFH	Military Family Housing
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
MHPI	Military Housing Privatization Initiative
msl	mean sea level
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Grave Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NLR	Noise Level Reduction
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
ODEQ	Oklahoma Department of Environmental Quality
ODS	Ozone-depleting substance
ODWC	Oklahoma Department of Wildlife Conservation
OG&E	Oklahoma Gas & Electric
ONG	Oklahoma Natural Gas

OPDES	Oklahoma Pollutant Discharge Elimination System
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCBs	polychlorinated biphenyls
pCi/L	picocuries per liter
PL	Public Law
PM	particulate matter
$PM_{2.5}$	particulate matter equal or less than 2.5 micrometers in diameter
PM_{10}	particulate matter equal or less than 10 micrometers in diameter
POL	Petroleum, Oils and Lubricants
POTW	Publicly Owned Treatment Works
POV	personal operated vehicle
PPA	Pollution Prevention Act
ppm	parts per million
PSD	Prevention of Significant Deterioration
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RMS	Root mean square
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
sf	square feet
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SUPT	Specialized Undergraduate Pilot Training
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
TSCA	Toxic Substances Control Act
TSP	total suspended particulate
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USTs	Underground Storage Tanks
VOCs	volatile organic compounds

CHAPTER 1
PURPOSE OF AND NEED FOR ACTION

This section has six parts: a statement of the purpose of and need for action; a description of the location of the Proposed Action; identification of the decision to be made; a description of the scope of the environmental review; identification of applicable regulatory requirements; and an introduction to the organization of the document.

This environmental assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) Parts 1500-1508; 32 CFR 989, Environmental Impact Analysis Process (EIAP); and Air Force Instruction (AFI) 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP).

1.1 Purpose Of and Need for Action

As of March 2004, the United States Air Force (Air Force) operated and maintained approximately 104,000 housing units (Diamond, 2004). Many of these homes were constructed in the 1950s and 1960s and do not meet modern standards. The Air Force estimates that approximately 40% of the existing housing inventory is inadequate (Diamond, 2004). To address the problem of inadequate housing, the Office of the Secretary of Defense (OSD) Planning Guidance requires that all Services "revitalize, divest through privatization, or demolish inadequate housing by or before 2010" (OSD, 1997). Under the traditional Military Construction (MILCON) funding approach, upgrading the existing housing inventory for all Services would take approximately 20 years at a cost of $16 billion (OSD, 2005).

In the absence of sufficient available MILCON funding to meet the OSD requirements, Congress enacted the Military Housing Privatization Initiative (MHPI) in the 1996 Defense Authorization Act. Under the MHPI authorities, the Air Force and other Services are authorized to address housing needs by utilizing privately financed and privately built housing where economically feasible. The MHPI has been designated a President's Management Agenda Initiative, and both Secretary Rumsfeld and President Bush have made it a priority to eliminate inadequate family housing units by 2007, moving the Department of Defense (DoD) deadline up from 2010 (OSD, 2005).

The Air Force has developed a Family Housing Master Plan (FHMP), which, based on a detailed economic analysis and evaluation of feasibility criteria identifies installations that are appropriate candidates for privatization. Vance Air Force Base (AFB) has been identified in the FHMP as a Base suitable for privatization.

Vance AFB currently has 230 military family housing (MFH) units in its inventory, which is one more unit than the required inventory. All of these units are considered eligible for privatization. Of the 230 units, 54 were demolished in 2004 and have been reconstructed. The remaining 176 units were constructed in the late 1950s and early 1960s, and are considered inadequate. The size of the 176 inadequate units ranges from 950 square feet to 1,800 square feet. Complete replacement of these 176 units is necessary because these units no longer meet minimum Air Force requirements for adequate, modern housing described in the OSD 2010 guidance.

There is a significant demand for MFH at Vance AFB. The MFH occupancy rate has remained at 98% for the last three years and the waiting period can be as much as 6 months. MFH privatization at Vance AFB would provide a feasible way to accelerate housing improvements to (1) provide adequate housing for military families and (2) achieve the objectives of the Defense Planning Guidance.

1.2 Location of Proposed Action

Vance AFB is located in north-central Oklahoma in Garfield County, just south of the City of Enid (Figure 1-1). The Base encompasses approximately 2,000 acres. Land use around the Base is a mixture of residential, agricultural, and commercial. The MFH area at Vance AFB is located at the northeast boundary of the Base, as shown on Figure 1-2. The MFH area consists of a total of approximately 88 acres. This includes 10 acres of land at the northern end of the MFH area that was acquired by the U.S. in 2003 and includes some of the 54 newly constructed MFH units, and approximately 14 acres to the south end of the MFH area that is currently a park and would be converted to MFH as part of the Proposed Action.

1.3 Decision To Be Made

The EA documents analysis of the potential environmental impacts of Vance AFB's Proposed Action, the Maximum Development Alternative, and the No Action Alternative. Based on the information presented in the EA, the Air Education and Training Command (AETC) will determine whether to prepare a Finding of No Significant Impact (FONSI) or to prepare an Environmental Impact Statement (EIS). A FONSI would be appropriate if the analyses presented in the EA indicate that implementation of the Proposed Action would not result in significant environmental impacts. If significant environmental issues arise that cannot be mitigated to insignificance, an EIS would be required. As required by NEPA and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project, and be available to inform decision-makers and the public of the potential environmental impacts of selecting the Proposed Action or the No Action Alternative.

1.4 Scope of the Environmental Review

Congress passed the National Environmental Policy Act (Public Law [PL] 91-190), or NEPA, in 1969. The primary purpose of NEPA was to ensure that federal agencies consider the effects of Federal funding on certain environmental resources and allow for public involvement in the decision-making process. Under NEPA, federal agencies are required to systematically assess the environmental consequences of their Proposed Actions before making a final decision on the Proposed Action. The CEQ was established under NEPA to issue regulations and guidance regarding NEPA compliance and to oversee the efforts of federal agencies to implement NEPA programs. The CEQ issued NEPA implementation regulations in 1978. These regulations are included in Title 40 CFR Parts 1500-1508.

This EA describes and evaluates the potential environmental impacts associated with privatization of 230 MFH units, demolition of 176 inadequate MFH units, and reconstruction of 175 MFH units at Vance AFB. As appropriate, the affected environment and environmental consequences of the action may be described in terms of a regional overview or a site-specific description. Although mitigation measures are not required, this EA identifies operating procedures that could be implemented to further minimize environmental impacts. Fiscal Year (FY) 2004 or the most current information will be used as the baseline condition.

The resource areas that have been identified for study at Vance AFB include:

- Noise;
- Land Use;
- Air Quality,
- Socioeconomic Resources;
- Environmental Justice;
- Cultural Resources;
- Hazardous Materials and Wastes;
- Infrastructure and Utilities;
- Earth Resources,
- Water Resources, and
- Biological Resources.

Airspace and aircraft operations were not evaluated as part of this EA because the Proposed Action and alternatives will not affect these components of the installation. Additionally, the health and safety impacts that may arise during construction and maintenance

of the MFH units and associated facilities were not evaluated because all contractors would be responsible for complying with applicable Occupational Safety and Health Administration (OSHA) regulations specifying appropriate protective measures for employees.

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued by President Clinton on February 11, 1994. In the EO, the President instructed each Federal Agency to make "achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Adverse is defined by the Federal Interagency Working Group on Environmental Justice as 'having a deleterious effect on human health or the environment that is significant, unacceptable, or above generally accepted norms.' Based on the analyses of impacts in this EA, a determination on the significance of impacts will be made in a decision document. If impacts would be significant, the Air Force would either prepare an EIS or not implement the proposal. If impacts would not be significant, a FONSI would be prepared. Accordingly, Environmental Justice will be addressed either in a FONSI or in a Record of Decision (ROD) based on an EIS.

The assessment of potential impacts in the EA takes into consideration possible cumulative impacts from other actions that could potentially take place during the Proposed Action, either at or near Vance AFB or in the City of Enid. The CEQ defines a cumulative impact in 40 CFR 1508.7 as the "impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." The environmental impacts of actions currently underway at Vance AFB have been analyzed in separate NEPA documents. Environmental impacts of future actions at Vance AFB were evaluated in the context of potential cumulative impacts. Based on an interview with the City of Enid Planning Administrator, no actions are likely to be ongoing either in the City of Enid or around the Base while the Proposed Action is being implemented (Bauer, 2004).

1.5 Applicable Regulatory Requirements

This EA complies with NEPA, the CEQ regulations, 32 CFR 989, EIAP, and AFI 32-7060, IICEP. The EA considers all applicable laws and regulations, including but not limited to the following:

- National Historic Preservation Act (NHPA)

- Archaeological Resources Protection Act (ARPA)
- Clean Air Act (CAA)
- AFI 32-7040, Air Quality Compliance
- Clean Water Act (CWA)
- Endangered Species Act (ESA)
- Pollution Prevention Act (PPA)

Table 1-1 presents potentially required federal permits, licenses, and entitlements. Adherence to a SWPP would also be required.

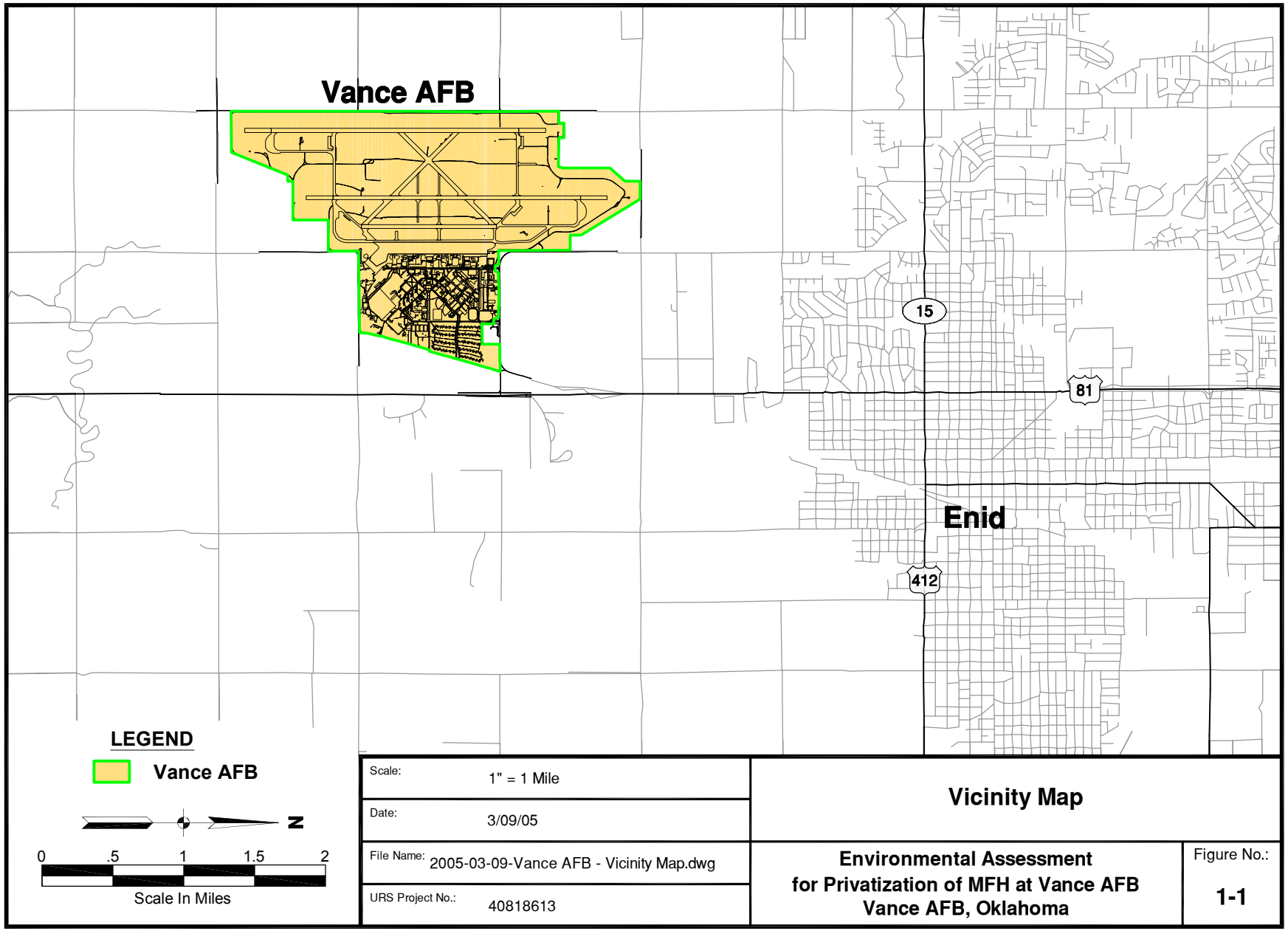
1.6 Introduction to the Organization of the Document

This EA is organized into seven chapters. Chapter 1 contains a statement of the purpose of and need for action; the location of the Proposed Action; identification of the decision to be made; a summary of the scope of the environmental review; identification of applicable regulatory requirements; and a description of the organization of the EA. Chapter 2 describes the history of the formulation of alternatives; describes the alternatives eliminated from further consideration; provides a detailed description of the Proposed Action; describes the Maximum Development Alternative and No Action Alternative; summarizes other actions announced for Vance AFB and the surrounding community; provides a comparison matrix of environmental effects for all alternatives; provides mitigation and best management practices; and identifies the preferred alternative. Chapter 3 contains a general description of the current conditions of the biophysical resources that potentially could be affected by the proposed or alternative actions. Chapter 4 presents an analysis of the environmental consequences. Chapter 5 lists preparers of this document. Chapter 6 lists persons and agencies consulted in the preparation of this EA. Chapter 7 includes a list of source documents relevant to the preparation of this EA.

Table 1-1. Potentially Required Federal Permit, License, or Entitlement

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Title V permit under the CAA	Sources subject to the Title V permit program include: Any major source: (1) A stationary source that emits or has the potential to emit 100 tons per year (tpy)of any pollutant (major source threshold can be lower in non-attainment areas), (2) A major source of air toxics regulated under Section 112 of Title III (sources that emit or have the potential to emit 10 tpy or more of a hazardous air pollutant or 25 tpy or more of any combination of hazardous air pollutants). Any "affected source" as defined in Title IV (acid rain) of the CAA. Any source subject to New Source Performance Standards under Section 111 of the CAA. Sources required to have new source or modification permits under Parts C {Prevention of Significant Deterioration (attainment areas)} or D {New Source Review (non-attainment areas)} of Title I of the CAA. Any source subject to standards, limitations, or other requirements under Section 112 of the CAA. Other sources designated by USEPA in the regulations.	Title V of CAA, as amended by the 1990 CAA Amendments	USEPA; ODEQ
National Pollutant Discharge Elimination System permit	Discharge of pollutant from any point source into navigable waters of the United States and/or construction on sites > 5 acres, or on sites >1 acre if part of a larger common plan of development.	§ 402 of CWA; 33 USC, §1342 40 CFR 112	USEPA; ODEQ
ARPA	Excavation and/or removal of archaeological resources from public lands or American Indian lands and carrying out activities associated with such excavation and/or removal.	ARPA of 1979, 16 USC 470AA *et seq*.	US Department of the Interior - National Park Service
NHPA	Federal undertakings which have the potential to adversely affect properties included in or eligible for inclusion in the NRHP.	NHPA, §106	Oklahoma Historical Society
ESA	Taking endangered or threatened wildlife species; engaging in certain commercial trade of endangered or threatened plants or removing such plants on property subject to federal jurisdiction.	Section 10 of ESA, 16 USC 1539; 50 CFR 17 Subparts C, D, F, and G	USFWS
CWA	Discharge of dredged or fill materials, toxic constituents in wastewater, and storm water into the waters of the United States (to include wetlands).	33 USC 1251 et seq.	USEPA and USACE

ARPA = Archaeological Resources Protection Act
CAA = Clean Air Act
CWA = Clean Water Act
ESA = Endangered Species Act
NHPA = National Historic Preservation Act
NRHP – National Register of Historic Places
ODEQ = Oklahoma Department of Environmental Quality
tpy = tons per year
USACE = United States Army Corps of Engineers
USC = United States Code
USEPA = United States Environmental Protection Agency
USFWS = United States Fish and Wildlife Service



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Vicinity Map

Environmental Assessment for Privatization of MFH at Vance AFB Vance AFB, Oklahoma

Figure No.: **1-1**

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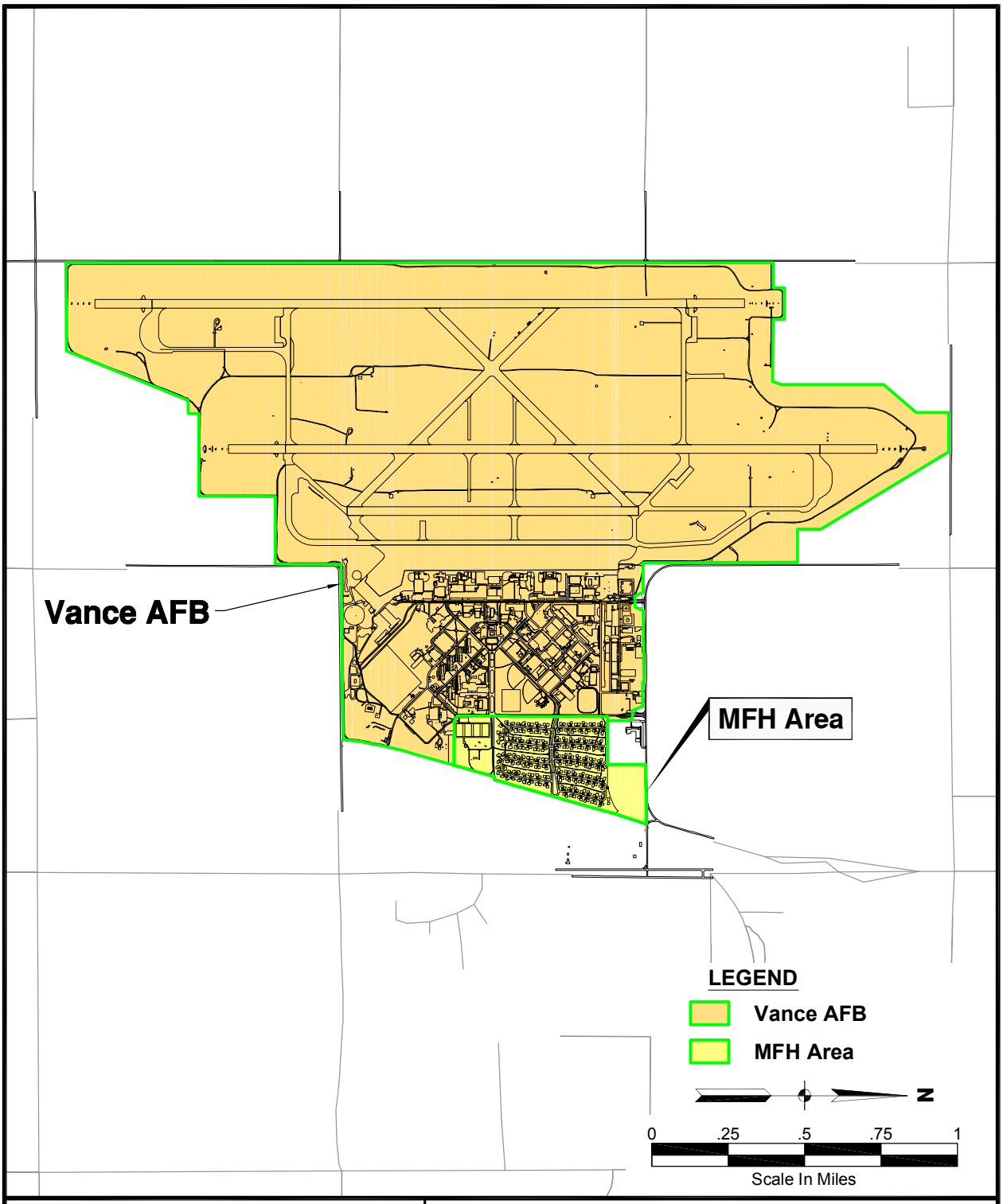

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CHAPTER 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter is composed of eight sections: a brief history of the formulation of alternatives, identification of alternatives eliminated from further consideration, a detailed description of the Proposed Action, a description of the Maximum Development Alternative and No Action alternative, identification of other Proposed Actions planned for Vance AFB, a summary of environmental impacts of all alternatives, and identification of the preferred alternative.

2.1 History of the Formulation of Alternatives

The current number of MFH units at Vance AFB is 230 units, one more unit than the Housing Resource Market Analysis (HRMA) requirement of 229 units. At the time the OSD Guidance to upgrade inadequate housing was published, all of the housing units at Vance were approaching 40 years old. To address the OSD directive, Vance AFB developed a multi-phase plan to replace all MFH units. The purpose of implementing a phased approach was to minimize displacement of military families while improvements were being made, as well as to address the most inadequate units first.

Phase I of the plan included demolition and replacement of 54 units located in the northeastern corner of the housing area (see Figure 2-1). Based on an economic analysis conducted by the Vance AFB Facilities Management Office in 2002 and an EA completed in 2003, demolition and replacement was determined to be the most effective method for bringing the Phase I units up to Air Force standards (USAF, 2003a). Based on this determination, 54 units were demolished and reconstructed using MILCON funding. Although 54 units have been upgraded to modern standards, 176 inadequate units remain as of 2005.

Since the 2002 decision to demolish and reconstruct the 54 units previously discussed, AETC has completed an in-depth analysis of the housing requirements and needs at Vance AFB and determined that privatization is the most cost-effective investment option for Vance AFB to meet its MFH requirements consistent with Congressional and OSD constraints and directives. Therefore, the original plan to upgrade the MFH units in three phases was superseded by the recommendation to privatize. The Proposed Action is to convey 230 units to a private contractor with demolition of 176 inadequate units and reconstruction of 175 new units to meet the HRMA of 229 units.

The Maximum Development Alternative would consist of conveying 230 units, demolishing 230 units, and constructing 422 new units. This alternative assumes that six units can be built on 80% of the acreage conveyed to account for additional space for roads, sidewalks, playground areas, tot lots, and green space.

As discussed in Section 2.2, two other alternatives were considered but eliminated from consideration. Inclusion of the no action alternative is required per the CEQ regulations and serves as a benchmark against which the Proposed Action can be evaluated. The following sections briefly describe each alternative in addition to the no action alternative.

2.2 Identification of Alternatives Eliminated from Consideration

Two alternatives to the Proposed Action were initially considered but ultimately eliminated from further consideration. Privatization and subsequent renovation of the 176 inadequate units was one of the two alternatives considered. Due to the scope of renovations that would be required to bring the units up to Air Force standards, renovation costs are projected to exceed 70% of replacement costs. Air Force guidelines do not allow renovations if the cost exceeds 70% of replacement costs. In addition, although this alternative would upgrade the interior of the MFH units to modern standards, the square footage would remain below Air Force standards. Adding on to the existing units would address the square footage issue. However, this approach would reduce the amount of space between housing units, which would have a negative impact on the neighborhood.

Vance AFB also considered renovation and/or demolition and construction using MILCON funding. However, as stated above, renovation is not a viable alternative given the costs and square footage requirements. In addition, sufficient MILCON funding will not be available to demolish 176 units and reconstruct 175 units in a timely manner.

2.3 Detailed Description of Proposed Action

The Proposed Action is to convey 230 housing units to a privatization contractor for development, operation, and maintenance over a 50-year period. The Government would retain ownership of the underlying land and lease it to the private developer. The existing housing inventory includes the 54 newly constructed MFH units and 176 existing units that do not currently meet Air Force housing standards. It is expected that the privatization contractor will demolish the existing 176 inadequate units and construct 175 new housing units to meet the HRMA of 229 units.

All of the utility lines (water, sewer, and gas mains and laterals) in the housing area would be replaced when the new homes are constructed. In addition, with the exception of the main road in the middle of the housing area, all of the existing roads will be demolished and replaced with new roads based on the revised housing configuration. The existing wastewater pump station will remain in operation and will be conveyed to the privatization contractor.

The existing park will be eliminated to make space for the newly constructed housing. However, smaller playground areas would be constructed throughout the newly developed housing area. The privatization contractor will likely construct a club house/maintenance building that could be used by military personnel for social functions as well as to provide office space for maintenance personnel and storage space for maintenance equipment. Although no final plans have been established for this building, the EA includes a discussion of the potential for this structure.

To minimize displacement, the privatization contractor will be required to phase construction activities such that the minimum required number of 229 homes would be available to military personnel and their families while construction activities are ongoing. This requirement would most likely dictate that the first phase of new homes be constructed on the parcel of property that is currently being used as a playground.

2.4 Maximum Development Alternative

The Maximum Development Alternative would consist of conveying 230 units, demolishing 230 units, and constructing 422 new units. This alternative assumes that six units per acre can be constructed on 80% of the acreage conveyed with the remaining 20% used for roads, sidewalks, playground areas, tot lots, and green space.

2.5 Description of the No Action Alternative

Under the no action alternative, Vance AFB would continue to provide for the housing needs of Base personnel through traditional MILCON funding. The Air Force would demolish one unit to reach the HRMA end state of 229 units. The existing inadequate units would continue to degrade and Air Force members and their families would continue to live in substandard housing. In addition, there would be substantial inequities between the 54 newly constructed homes that have a minimum square footage of 1,760 square feet and the 176 existing inadequate homes where the average square footage is 1,200 square feet. Furthermore, Vance AFB would not be in compliance with the OSD 2010 directive.

2.6 Other Actions Planned for Vance AFB and Surrounding Community

Based on an interview with the City of Enid Planning Administrator, in 2005 the City of Enid and the State of Oklahoma will be conducting roadway improvements on Southgate Road between 81 West and Cleveland Street (Bauer, 2004). This roadway is located a few miles north of Vance AFB. The City of Enid anticipates that the roadway improvements will be completed by October 2005, well before the Proposed Action is implemented. In February 2005, the Enid Metropolitan Area Planning Commission approved a site development plan for Westgate Shopping Center that includes construction of a 3,700 square foot retail building (Barron 2005). However, based on an interview with the City of Enid Planning Assistant, construction is expected to be completed by the end of 2005 (Ruther, 2005). There are no other actions planned by the City of Enid in the foreseeable future (Bauer 2004 and Ruther 2005).

There are two actions currently underway at Vance AFB that may result in cumulative impacts:

- Construction of the 54 new MFH units, and
- Replacement of T-37 aircraft with T-6A aircraft.

Both actions are expected to be completed prior to initiation of the proposed MFH privatization project. Therefore, these activities will not be evaluated in the cumulative impacts assessment. Vance AFB has requested funding to develop the Baker Tract property and move the main entry of the Base to the north. Although funding for this initiative is not expected prior to FY2010, there is always a possibility that MILCON funding would be made available earlier than projected. Therefore, a brief analysis of this potential future action will be included in the assessment of cumulative impacts should the Baker Tract property be developed concurrent with demolition and construction activities undertaken by the privatization contractor.

2.7 Comparison Matrix of Environmental Effects of All Alternatives

Table 2-1 summarizes the effects of the No Action, Proposed Action and the Maximum Development Alternative. The No Action alternative describes the baseline conditions.

Table 2-1. Summary of Environmental Effects

Resource	No Action Alternative Demolition of 1 Unit	Proposed Action Conveyance of 230 MFH Units to Private Developer: Demolition of 176 Units and Construction of 175 Units	Maximum Development Alternative Conveyance of 230 MFH Units to Private Developer: Demolition of 230 Units and Construction of 422 Units
Noise	No significant change of baseline conditions other than the short-term annoyance from the demolition of one unit.	The primary source of noise at Vance AFB would continue to be from aircraft operations; however, there could be periods of time during which demolition and construction noise could be discerned and create a minor annoyance to on-Base personnel. This condition would occur when construction activity is underway and flying activity is low. After completion of the demolition and construction activities, there would be no change to existing noise levels. The existing park is mostly within the 70 DNL noise zone. The new parks will be located within the 65 DNL noise zone. Therefore, there will be a slight reduction in noise levels for MFH residents who access the parks for recreational use. However, the homes that are to be constructed in the current park will be located in a higher noise zone (70 DNL) than the current inadequate units (65-69 DNL). The installation of sound proofing equipment at these new residences will minimize the interior noise levels in these units such that interior noise levels over the long-term would be less than those present in the existing inadequate units. Overall, noise impacts associated with the Proposed Action would be negligible. Therefore, the Proposed Action would not produce any long-term impacts to the existing noise environment.	Noise annoyance from construction would be slightly longer in duration than under the Proposed Action. However, overall noise impacts would continue to be negligible and would not produce long-term impacts to the existing environment. As with the Proposed Action, similar beneficial impacts would result from the installation of sound proofing equipment in the new units.
Land Use	No change.	No adverse impacts would be anticipated. With the exception of the existing park, which will be demolished to make room for newly constructed MFH units, there will be no change to current land use. Although the park will be converted from residential recreational use to residential use, smaller playground areas would be constructed throughout the newly developed housing area so that resident children will continue to have access to parks and recreation in the MFH area.	The density of housing would be greater than under the Proposed Action and less space would be available to construct playground areas for resident children. The impacts would not be significant however, as 20% of the total acreage conveyed would be allocated to sidewalks, streets, and green space (including playgrounds).

Table 2-1. Summary of Environmental Effects (continued)

Resource	No Action Alternative Demolition of 1 Unit	Proposed Action Conveyance of 230 MFH Units to Private Developer: Demolition of 176 Units and Construction of 175 Units	Maximum Development Alternative Conveyance of 230 MFH Units to Private Developer: Demolition of 230 Units and Construction of 422 Units
Air Quality	Short-term impacts related to the demolition of one unit.	Heavy equipment exhaust and fugitive dust emissions from demolition and construction activities would slightly increase short-term criteria pollutant ambient air concentrations. The Proposed Action would result in short-term minor impacts to regional air quality. However, the increases would be minimal (less than 0.6 percent increase for any criteria pollutant) when compared to the air emissions baseline for Air Quality Control Region (AQCR) No. 185. Furthermore, the effects would be temporary, would diminish rapidly with distance from the proposed demolition and construction sites, and would not result in any long-term impacts.	Short-term emissions during demolition and construction would be slightly elevated relative to the Proposed Action. All emissions would fall well below the 10 percent threshold that is considered regionally significant by the USEPA if the region were nonattainment for any of the criteria pollutants. Additionally, as with the Proposed Action, the effects from construction activities would last only as long as the duration of construction activity, decrease rapidly with distance from the construction site, and would not result in long-term impacts.
Socioeconomic Resources	MFH at Vance AFB would continue to deteriorate. The short-term beneficial impacts from construction activities that would be realized under the Proposed Action would not occur.	Short-term beneficial impacts would be anticipated. Short-term beneficial impacts on regional socioeconomics would occur during construction activities at Vance AFB. However, no long-term benefits would occur, and there would be no changes in socioeconomic patterns or trends.	Similar impacts to the Proposed Action. Long-term increase in the local population and in the number of children attending local schools due to the construction of additional housing units.
Environmental Justice	No change.	Based on the United States (U.S.) Census data, the proposed project is not located in an environmental justice area of concern. Therefore, there is no potential for the proposed project to have disproportionately high and adverse effects on minority or low-income populations.	Based on the U.S. Census data, the proposed project is not located in an environmental justice area of concern. Therefore, there is no potential for the proposed project to have disproportionately high and adverse effects on minority or low-income populations.

Table 2-1. Summary of Environmental Effects (continued)

Resource	No Action Alternative Demolition of 1 Unit	Proposed Action Conveyance of 230 MFH Units to Private Developer: Demolition of 176 Units and Construction of 175 Units	Maximum Development Alternative Conveyance of 230 MFH Units to Private Developer: Demolition of 230 Units and Construction of 422 Units
Cultural Resources	No impact. Unit to be demolished is not considered historically significant.	The location of proposed demolition and construction activities is in an area that has been previously disturbed. Additionally, no historic architectural or archaeological resources are located in this area. No adverse impacts would be anticipated.	The location of the proposed demolition and construction activities is in an area that has been previously disturbed. Additionally, no historic architectural or archaeological resources are located in this area. No adverse impacts would be anticipated.
Hazardous Materials and Wastes	Similar impacts related to the demolition of one unit involving potential presence of LBP and ACM. Long-term maintenance and mitigation issues related to LBP and ACM from continued deterioration of units.	The amount of hazardous materials used and the amount of hazardous waste generated would be expected to remain the same. The contractor would be responsible for handling any hazardous waste generated as a result of the proposed demolition and construction activities in accordance with applicable federal, state, and Air Force regulations. No MFH units and associated infrastructure would be constructed on an Installation Restoration Program (IRP) site. Asbestos containing materials (ACM) and lead-based paint (LBP) are expected to be encountered during building demolition. The demolition contractor will be responsible for complying with relevant health and safety and disposal regulations. The soil under and immediately surrounding the MFH units may contain pesticide contaminants, including chlordane and creosote. The construction contractor would be responsible for minimizing the disturbance of soil during demolition and construction activities. Additionally, prior to occupancy of the MFH units, the contractor would be responsible for ensuring that representative sampling of the soils be conducted to determine the level of contamination and that appropriate measures are taken.	Same as the Proposed Action.

Table 2-1. Summary of Environmental Effects (continued)

Resource	No Action Alternative Demolition of 1 Unit	Proposed Action Conveyance of 230 MFH Units to Private Developer: Demolition of 176 Units and Construction of 175 Units	Maximum Development Alternative Conveyance of 230 MFH Units to Private Developer: Demolition of 230 Units and Construction of 422 Units
Infrastructure / Utilities	Very minor increase in the number of vehicles entering and exiting the Base during demolition of one unit. Demolition debris requiring disposal at the landfill would total approximately 66 tons. Negligible decrease in potable water consumption and wastewater generation from the demolition of 1 unit.	Electricity and natural gas usage would likely increase due to the larger size of the new MFH units. However, this increase would be offset by implementing higher efficiency heating and air conditioning equipment. The number of vehicles entering and exiting the Base each day, as well as the on-Base volume of traffic, would be expected to temporarily increase due to an increase in the number vehicles required for demolition and construction activities. An increase in the number of heavy loads that would be expected from construction equipment and roll-off dumpsters as a result of the Proposed Action would temporarily adversely affect existing road surface conditions during the construction phase of the project. Repair of small roadway sections may be required following completion of demolition and construction activities. Construction and demolition debris requiring disposal at the landfill would total approximately 12,410 tons over the duration of the project. Assuming that demolition and construction would be completed in five years, the annual increase is estimated at 2,482 tons per year, almost doubling the current generation of waste at Vance AFB, but substantially less than the 1.6 million tons of existing disposal capacity at the City of Enid Landfill. Water consumption, and solid waste and wastewater generation would slightly decrease due to 1 less housing unit. Erosion and stormwater runoff will be controlled through adherence to best management practices described in a Stormwater Pollution Prevention Plan (SWPPP). Although there would be an increase of impervious surface area, the increase would be negligible and drainage patterns would not change.	Slight increase in wastewater and solid waste generation and electricity, natural gas, and potable water usage relative to the Proposed Action. Long-term minor increases in traffic counts would result due to an increase in the overall number of housing units.

Table 2-1. Summary of Environmental Effects (continued)

Resource	No Action Alternative Demolition of 1 Unit	Proposed Action Conveyance of 230 MFH Units to Private Developer: Demolition of 176 Units and Construction of 175 Units	Maximum Development Alternative Conveyance of 230 MFH Units to Private Developer: Demolition of 230 Units and Construction of 422 Units
Earth Resources	Negligible disturbance during the demolition of 1 unit.	Minimal short-term impacts would be anticipated. However, construction activities at Vance AFB would occur within areas where the physiography, geology, and soils have been previously disturbed and modified by prior building construction. Implementation of best management practices during construction would reduce the potential for erosion.	Same as Proposed Action.
Water Resources	Negligible increase in water usage for dust control during the demolition of one unit.	Additional water usage would be required during construction as a fugitive dust control measure. The quantity necessary would be minimal and no adverse impact is anticipated. A slight decrease in water consumption is expected as a result of 1 less housing unit. None of the proposed construction would occur in a floodplain. Use of best management practices during construction would reduce the potential for sedimentation entering receiving bodies of water. No impacts to groundwater would occur, as excavation for new home construction is not expected to reach the water table, which is over 6 feet below ground surface (bgs).	Similar impacts to the Proposed Action. Increase of approximately 14 acres in the area of improved land relative to the Proposed Action. This increase would be negligible relative to the total area of improved land at Vance AFB.
Biological Resources	No change.	The proposed demolition and construction activities would occur on previously disturbed areas within developed regions of the Base. No federally or state-listed endangered, threatened, or special status species are known to occur within a 50-mile radius of Vance AFB. No construction activities would occur in or near wetlands.	Same as Proposed Action.

2.8 Identification of the Preferred Alternative

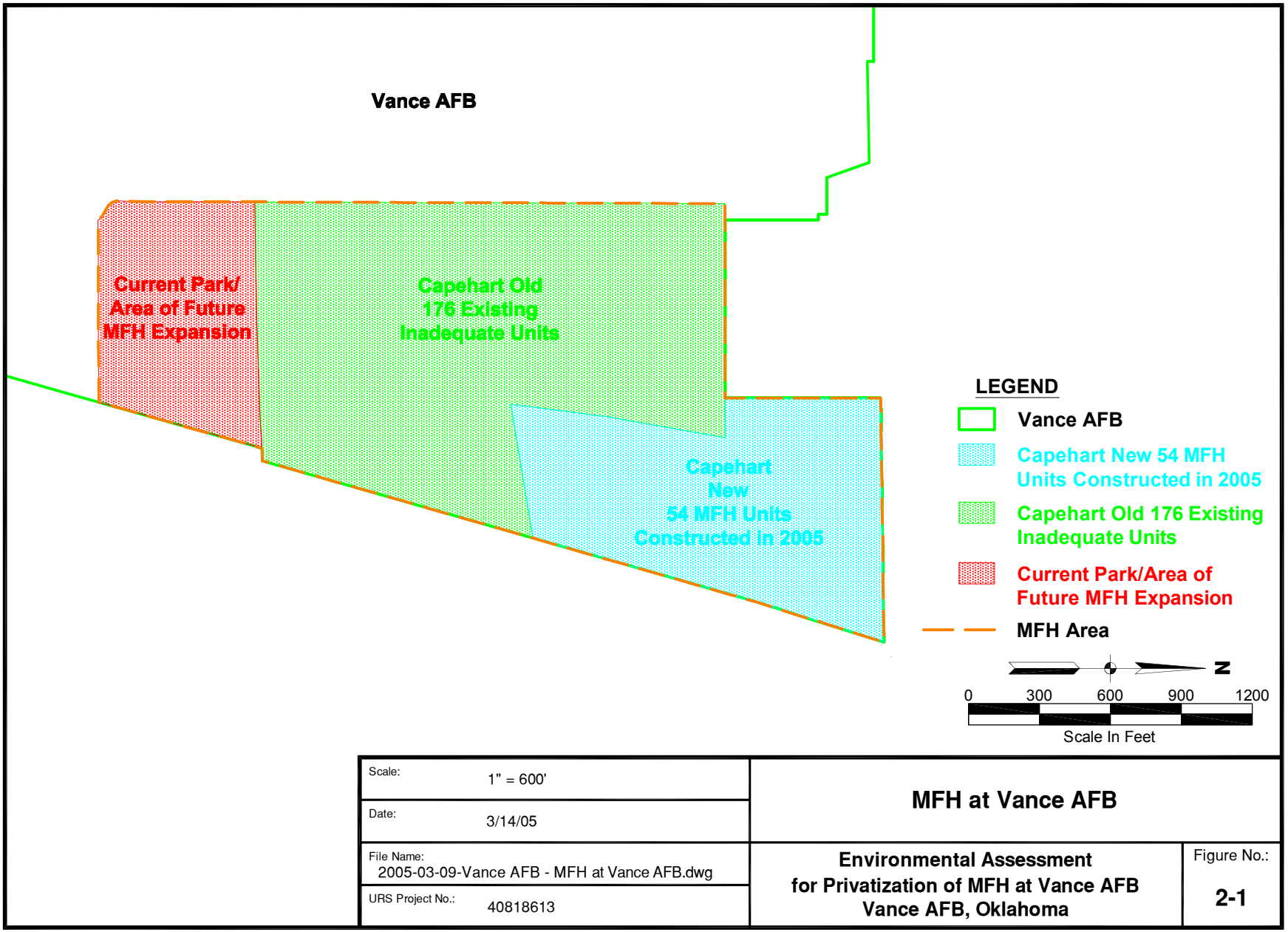
The preferred alternative is to privatize MFH at Vance AFB as described in Section 2.3, Detailed Description of Proposed Action.

2.9 Mitigation Measures/Best Management Practices

Based on the analysis of potential environmental effects, mitigation measures may not be necessary for the proposed action. However, best management practices for specific resources would be implemented as part of the Proposed Action as a means to further minimize environmental impacts. Table 2-2 presents these best management practices, which are further discussed in Chapter 4, Environmental Consequences**.**

Table 2-2. Summary of Best Management Practices (BMP)

Resources	Proposed Action Best Management Practices
Noise	New facilities will be designed and constructed to comply with Air Force Noise Level Reduction policy to reduce interior noise levels in residential and public use buildings to a Day-Night Average Sound Level (DNL) of about 45A-weighted decibels (dBA). Construction equipment will be equipped with manufacturer's standard noise control devices.
Air Quality	Construction contractors would apply water at the construction site to control fugitive dust emissions.
Cultural Resources	If any archeological artifacts were to be exposed during construction, the construction activities would cease, as required by federal regulations. Work would not resume until an archeological investigation is completed.
Geological and Water Resources	Construction contractors would use erosion and sedimentation control techniques such as silt fencing and temporary diversions to minimize erosion and sedimentation during construction. BMPs specified in the SWPPP would be followed to minimize surface water quality impacts from construction activities. Disturbed areas would be re-vegetated as soon as possible.
Hazardous Waste	The contractors would follow ACM removal procedures during demolition activities, and follow procedures identified in the LBP Management Plan to properly manage LBP waste. The contractor would sample soils prior to occupancy of new MFH units and conduct a risk assessment if results exceed 1.6 mg/kg. All hazardous materials and waste would be disposed of following applicable State and Federal regulations.



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CHAPTER 3
AFFECTED ENVIRONMENT

This chapter describes the human, physical, biological, and cultural environment that could be affected by implementation of the Proposed Action or alternatives. The affected environment is a baseline for each discipline and describes the current conditions prior to and in the absence of the Proposed Action. The baseline conditions presented in this chapter are described to the level of detail necessary to support the analysis of potential impacts, presented in Chapter 4, "Environmental Consequences."

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These resources and conditions include noise, land use, air quality, socioeconomic resources, environmental justice, cultural resources, hazardous materials and wastes, infrastructure and utilities, earth resources, water resources, and biological resources.

3.1 Description of the Affected Environment

3.1.1 Noise

Background Information

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels over an extended period has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to noise is diverse and influenced by various factors, including the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations, which travel through a medium, such as air, and are sensed by the human ear (Harris 1991). Sound is generally characterized by a number of variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB).

Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB can be felt inside the human ear as discomfort and eventually pain beyond this threshold. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. An increase (or decrease) in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

60 dB + 60 dB = 63 dB, and
80 dB + 80 dB = 83 dB

Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone which makes the drum vibrate 100 times per second generates a sound pressure wave that is oscillating at 100 Hz; this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the best human ear.

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds a person hears do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). Sound-level meters, which use a filter corresponding to the dBA curve (i.e., the measurement collected with a sound level meter is already accounting for the human hearing sensitivity), measure the level of a noise source.

Another sound measure known as the Day-Night Average Noise Level (DNL) is defined as the A-weighted average sound level for a 24-hour day. The DNL is calculated by adding a 10 dBA penalty to sound levels at night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and night time hours. Figure 3-1 and Table 3-1 depict typical A-weighted sound levels (dBA) for various sources. For example, 65 dBA is equivalent to normal speech at a distance of 3 feet. DNL was endorsed by the U.S. Environmental Protection Agency (USEPA) for use by federal agencies and has been adopted by the Department of Housing and Urban Development, Federal Aviation Administration, and DoD.

Baseline Noise Levels

The noise associated with activities at Vance AFB is characteristic of the noise emitted by flying operations at most Air Force installations and commercial flying facilities. During periods of no aircraft activity at Vance AFB, noise associated with Base activities results primarily from maintenance and shop operations, ground traffic movement, occasional construction, and similar sources. This noise is almost entirely restricted to the Base itself and is comparable to sounds that occur in adjacent communities. The noise environment changes during periods of aircraft ground or flight activity.

Vance AFB recently updated its noise zones as a result of the *Environmental Assessment of T- 6A Beddown and Changes to the T-37 Program at Vance Air Force Base*. These noise zones were overlaid on the Vance AFB Base map to show their location relative to the subject MFH area. As shown in Figure 3-2, the northern portion of the housing area, including the area where the 54 new units were constructed, lies within the 65 dB DNL or less noise zone. Most of the area where the existing 176 MFH inadequate units are located lies within the 65 to 70 dB DNL noise zone. The park area at the southern portion of the MFH area, that currently has no MFH units, lies within the 70 to 75 dB DNL noise zone.

3.1.2 Land Use

Land use is the way in which, and the purposes for which, human beings employ the land and its resources. Land use includes natural conditions or human-modified activities occurring at a particular location. Natural land uses include forest land, grass lands, coastal areas, undisturbed wetlands, etc. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially

Table 3-1. Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels)

Example Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Example Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels)
Military Jet Take-off with After-burner (50ft)	140	Carrier Flight Deck	
Civil Defense Siren (100 ft)	130		
Commercial Jet Take-off (200 ft)	120		Threshold of Pain 32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	16 times as loud
Ambulance Siren (100 ft)	100		Very loud
Newspaper Press (5 ft)			8 times as loud
Power Lawn Mower (3 ft)			
Motorcycle (25 ft)	90	Boiler Room	4 times as loud
Propeller Plane Flyover (1,000 ft)		Printing Press Plant	
Diesel Truck, 40 mph (50 ft)			
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	2 times as loud
Passenger Car, 65 mph (25 ft)			Moderately Loud
Living room Stereo (15 ft)			70 decibels
Vacuum Cleaner (10 ft)	70		(Reference Loudness)
Electronic Typewriter (10 ft)			
Normal Conversation (3 ft)	60	Data Processing Center	1/2 as loud
Air conditioning Unit (100 ft)		Department Store	
Light Traffic (100 ft)	50	Private Business Office	1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet 1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	0		Threshold of Hearing

designated or environmentally sensitive areas. This section describes the existing land uses and aesthetics for the Base property and areas surrounding Vance AFB.

Vance AFB is located in Garfield County. The population of Garfield County was approximately 57,105 in 2003 with a population density of 54 persons per square mile (USCB, 2000a). The primary land use in Garfield County is agricultural. Wheat accounts for approximately 80% of the crops grown in the county, with corn, oats, sorghum, and soybeans totaling the remaining 20%. (Fedstats, 2001). The majority of non-agricultural areas in Garfield County are located in the incorporated areas of the City of Enid (City of Enid, 2005). The City of Enid contains the diverse land uses expected to be found in a city approaching 50,000 people.

The smaller rural town of Waukomis lies approximately four miles to the south of Vance AFB. This community is mostly residential with some mixed commercial uses (USAF, 2002a).

Vance AFB encompasses almost 2,000 acres. Existing land use surrounding the Base is almost entirely agricultural. Directly north of the base, properties consist of mostly undeveloped agricultural lands. Urban land uses are not found directly adjacent to Base boundaries. A small area of industrial/commercial uses is located just northeast of the MFH area, but does not share any common property lines (USAF, 2002a).

Figure 3-3 presents the various land uses within Vance AFB. As indicated in the figure, the northernmost portion of the Base is open space, and is referred to as the Baker Tract property. This area is likely to be developed in the future. However, the extent of development has yet to be finalized. The area on the west side of the Base is used primarily for aircraft operations and includes the aircraft runway, taxiway and apron, as well as aircraft operations and maintenance facilities. Industrial operations are maintained in two distinct areas that are well separated from any residential areas. Community, commercial, and service uses are predominantly grouped together in the north central part of the cantonment area. Base administrative uses are clustered together in a centralized location (USAF, 2002a). Medical facilities and several outdoor recreation areas are also present on Base.

The local governments around Vance AFB are interested in protecting the Base mission and in preventing any future encroachments into the area surrounding the Base. Enid zoning regulations have successfully prevented conflicted land uses from occurring, and it is expected that continued enforcement of this code will prevent any problems in the future (USAF, 2002a).

3.1.3 Air Quality

Air Quality Standards and Regulations

The air quality of an area is determined by the concentration of certain "criteria pollutants," the surface topography, the size of the air basin, and the prevailing meteorological conditions. The Federal Clean Air Act (CAA) (42 U.S.C.), passed in 1970, created a national program to control the damaging effects of air pollution. The CAA Amendments of 1990 went further to ensure that the air Americans breath is safe. The CAA does not specify how clean air must be attained, but rather delegates that responsibility to the USEPA. The resulting rules that ultimately govern emissions are written and promulgated by the USEPA. The USEPA

developed primary and secondary National Ambient Air Quality Standards (NAAQS) for criteria pollutants that have been determined to impact human health and the environment. These primary and secondary NAAQS are numerical concentration-based standards. Primary NAAQS standards define air quality levels for each criteria pollutant necessary to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary NAAQS standards define air quality levels for each criteria pollutant necessary to protect against decreased visibility and damage to animals, crops, vegetation, and buildings. The CAA air quality standards also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated technologies, and establish national emission standards for hazardous air pollutants.

NAAQS are currently established for seven criteria air pollutants including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns (or micrometers) in diameter (PM_{10}), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). Ozone is not emitted directly from stationary, mobile, or area pollution sources; rather, it is a product of photochemically reactive compounds such as NO_2 and volatile organic compounds (VOCs) that are emitted from various sources. These compounds are inventoried and quantified as precursors of O_3. Thus, emissions of nitrogen oxides (NO_X) and VOCs are commonly reported instead of O_3.

The USEPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as in attainment, nonattainment, or unclassified with regard to the air quality standards for each of the seven criteria pollutants. "In Attainment" describes a condition in which standards for one or more of the seven pollutants are being met in an area. The area is considered an in attainment area for only those criteria pollutants for which the national standards are being met. "Nonattainment" describes a condition in which standards for one or more of the seven pollutants are not being met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as in attainment. An area may have any of the three classifications for different criteria pollutants.

The Oklahoma Department of Environmental Quality (ODEQ) is responsible for implementation of the CAA and has adopted the federal primary and secondary NAAQS as presented in Table 3-2.

Table 3-2. National and State Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
Carbon Monoxide (CO)			
8-hour Average[1]	9 ppm	(10 mg/m^3) [b]	Primary
1-hour Average[1]	35 ppm	(40 mg/m^3) [b]	Primary
Nitrogen Dioxide (NO_2)			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m^3) [b]	Primary & Secondary
Ozone (O_3)			
1-hour Average[5]	0.12 ppm		Primary & Secondary
8-hour Average[6]	0.08 ppm		Primary & Secondary
Lead (Pb)			
Quarterly Average		1.5 µg/m^3	Primary & Secondary
Particulate ≤ 10 micrometers (PM_{10})			
Annual Arithmetic Mean[2]		50 µg/m^3	Primary & Secondary
24-hour Average[1]		150 µg/m^3	Primary & Secondary
Particulate ≤ 2.5 micrometers ($PM_{2.5}$)			
Annual Arithmetic Mean[3]		15 µg/m^3	Primary & Secondary
24-hour Average[4]		65 µg/m^3	Primary & Secondary
Sulfur Dioxide (SO_2)			
Annual Arithmetic Mean	0.03 ppm		Primary
24-hour Average[1]	0.14 ppm		Primary
3-hour Average[1]	0.50 ppm	(1300 µg/m^3) [b]	Secondary

Source: US EPA – 2005

Notes:

[1] Not to be exceeded more than once per year.

[2] To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

[3] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[4] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

[5] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[6] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is <= 1, as determined by appendix H.

(b) The 1-hour NAAQS will no longer apply to an area one year after the effective date of the designation of that area for the 8-hour ozone NAAQS. The effective designation date for most areas is June 15, 2004. (40 CFR 50.9; see Federal Register of April 30, 2004 (69 FR 23996).)

ppm – parts per million

mg/m^3 – milligrams per cubic meter

µg/m^3 – micrograms per cubic meter

The CAA §176(c)(1) prohibits federal agencies from undertaking projects that do not conform to a USEPA-approved State Implementation Plan (SIP) in nonattainment areas. In 1993, USEPA developed the General Conformity Rule, which specifies how federal agencies must determine CAA conformity for sources of non-attainment pollutants in designated nonattainment and maintenance areas. This rule and all subsequent amendments may be found in 40 CFR 51 Subpart W and 40 CFR 93 Subpart B. Through the Conformity Determination process specified in the final rule, any federal agency must analyze increases in pollutant emissions directly or indirectly attributable to a Proposed Action, and may need to complete a formal evaluation that may include modeling for NAAQS impacts, obtaining a commitment from the state regulatory agency to modify the SIP to account for emissions from a Proposed Action, and/or provision for mitigation for any significant increases in nonattainment pollutants. Since the Proposed Action at Vance AFB occurs in an in-attainment area, the General Conformity Rule does not apply. No further conformity analysis is required.

Air quality management at Air Force installations is established in AFI 32-7040, Air Quality Compliance. AFI 32-7040 requires installations to achieve and maintain compliance with all applicable federal, state, and local standards for air quality compliance. The applicable Federal standard is 42 U.S.C. 7401. If compliance requirements for air quality are more protective under state and local standards, the more protective requirement must be followed. Air quality compliance involves prevention, control, abatement, documentation, and reporting of air pollution from stationary sources and mobile sources if located in nonattainment areas. Maintaining compliance with air quality regulations may require reduction or elimination of pollutant emissions from existing sources and control of new pollution sources.

Regional Meteorology

Vance AFB is located in Garfield County, within the North Central Oklahoma Intrastate AQCR No. 185. This AQCR, which includes the counties of Garfield, Grant, Kay, Noble, and Payne, is classified as in attainment for all seven criteria pollutants (Federal Register, 2000). Vance AFB is within the interior plain region of Oklahoma; this section is a transitional area between the humid east and the semi-arid west. Frontal systems are quite active in Oklahoma as warm humid air masses from the Gulf of Mexico are displaced by continental polar air from Canada or maritime polar air from the North Pacific Ocean (City of Enid, 2005). Winters are typically short and mild and the summers hot and windy. Spring is the most variable time with frequent precipitation, severe storms, and tornadoes (USAF, 2002a). Average annual rainfall for the area is 32.4 inches per year. Monthly precipitation ranges from a low of 1.1 inches in

January to a high of 4.9 inches in May. Snowfall totals average 4.75 inches per year. Temperature for the area peaks in July with a monthly average of 82.6 degrees Fahrenheit (°F). The low temperature occurs in January with a monthly average of 33.1 °F. Table 3-3 shows normal monthly temperature and precipitation data for Garfield County. A total of 59 tornadoes occurred in Garfield County between 1971 and 2000 (OCS, 2000).

Table 3-3. Monthly Mean Temperature and Precipitation Levels in Garfield County (1971-2000)

Month	Monthly Mean Temperature (°F)	Monthly Mean Precipitation (Inches)
January	33.1	1.1
February	38.6	1.6
March	47.2	2.5
April	57.3	3.2
May	67.8	4.9
June	77.1	4.4
July	82.6	2.8
August	80.8	3.4
September	72.6	3.2
October	60.5	3.4
November	46.1	2.3
December	36.1	1.4

Note: Available data obtained from the Oklahoma Climatological Survey at http://www.climate.ocs.ou.edu/county/garfield.html.

Persistent climatic conditions may greatly influence local and regional air quality. Ozone production from photochemically reactive compounds (e.g., VOCs and NO_X) is greatly dependent on available sunshine and high temperatures. Persistent winds may serve to dilute and disperse concentrated pollutants while precipitation may trap compounds and remove them from the air.

Vance AFB Air Quality

Vance AFB routinely calculates annual criteria pollutant emissions from stationary sources and provides this information to the state as required by the ODEQ. However, there is no state or federal routine requirement to calculate pollutant emissions for aircraft operations, government-owned and privately-owned vehicles, aerospace ground equipment, and other sources not included in the state's stationary source permitting program. Additionally, there is no ODEQ requirement for Air Force facilities to prepare comprehensive air emissions inventories to include mobile source emissions.

Vance AFB is not a major source of pollutant emissions and, therefore, does not require a Federal Title V Operating Permit. However, Vance AFB has a facility-wide operating permit (ODEQ Permit No. 98-235-O) for engine test cells and general solvent use. In order to regulate pollutant emissions, the ODEQ has promulgated state-wide regulations that require minor and major stationary emissions sources to obtain construction permits and operating permits. In accordance with ODEQ Regulations (Title 252 Chapter 100, Subchapter 7), Vance AFB has obtained an operating permit as a "natural minor" source (USAF, 2003a). The installation's permit (ODEQ Permit No. 98-235-O) specifies operational and emission limits for two regulated source types: the Jet Engine Test Cell at Building 47; and General Solvent Use – basewide. All other source types at Vance AFB are considered *de minimis* and are not addressed by this permit. Any changes to the sources covered by this permit or ODEQ permitting requirements must be addressed in a modification to the permit (USAF, 2003a).

3.1.4 Socioeconomic Resources

Socioeconomic resources include population and economic activity. Changes in these two socioeconomic indicators may be accompanied by changes in other components such as housing availability and the provision of public services. Socioeconomic data shown in this section are presented at county, state, and U.S. levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. Data have been collected from previously published documents issued by federal, state, and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

The City of Enid is located in north-central Oklahoma in Garfield County. Vance AFB's socioeconomic impact is assumed to be limited to Garfield County because of the rural nature of the areas surrounding the base and the City of Enid. The socioeconomic status of Vance AFB, the City of Enid, and Garfield County is addressed in this section. The scope of this section includes population, housing, education, and economic activity.

Population

According to the US Census Bureau (USCB), the estimated population of Garfield County in 2000 was 57,813. In 1990 Garfield County's population was 56,735 (USCB, 1990a). The population increased an estimated 1.9 percent per year from 1990 to 2000.

Approximately 47,045 people, or 81 percent, of the estimated 2000 Garfield County population resided in the City of Enid (USCB 2000b). From 1990 to 2000, the population of Enid increased from 45,309 to 47,045, which is an average annual increase of 3.7 percent (USCB, 1990b and 2000b). Population growth for the state of Oklahoma from 1990 to 2000 was approximately 9.7 percent, compared with the nationwide population growth of 13.1 percent for the same period (USCB, 2000c).

Housing

According to the 2000 U.S. Census, Enid, Oklahoma has 21,255 housing units within its jurisdictional boundaries. Of these units, 18,955 (89%) are occupied and 2,338 (11%) are vacant. A total of 6,445 (34%) of Enid's occupied housing units are rented (City of Enid, 2005). According to the U.S. Census, 167 residential permits were issued in Garfield County in 2000 (USCB, 2000a).

Education

There are nine school districts in Garfield County: Chisholm, Cimarron, Covington Douglass, Drummond, Enid, Garber, Kremlin Hillsdale, Pioneer, and Waukomis. The total 2001 enrollment in Garfield County schools was approximately 11,765 students. Approximately 68 percent of all students in Garfield County primary and secondary schools attend school in the Enid School District.

The Enid School District has eleven elementary schools, three middle schools, and one high school. Children of military personnel residing on Vance AFB attend primary and secondary schools in the Enid School District. One of the elementary schools, Eisenhower Elementary School, with classes for grades K-6, is located immediately north of the MFH area, just outside the Base. There are no schools located on Base. The student enrollment in Enid public schools in 2001 was 8,056 (Yahoo, 2005).

The remaining Garfield County Schools had the following enrollments in 2001:

- Chisholm School District—970 students
- Cimarron School District—346 students
- Covington Douglass School District—327 students
- Drummond School District—298 students,

- Garber School District—388,
- Kremlin Hillsdale School District—267
- Pioneer School District—604
- Waukomis School District—502

Higher education opportunities are offered locally to residents of Garfield County at Northern Oklahoma University and Northwestern Oklahoma State University – Enid campus, and at several universities in Oklahoma City and the surrounding area, including: Metropolitan College, Mid America Bible College, Oklahoma City Community College, Oklahoma City University, Oklahoma Christian University, Oklahoma State University, and the University of Phoenix. In addition, students can attend the Air Force's voluntary education service, directed and managed by the Seventy First Flying Training Wing, which offers on-base college and university programs that meet the needs of Vance AFB personnel.

Economy

The Garfield County labor force was reported to be 26,200 in November 2004, with a 2.9 percent unemployment rate, which was a slight decrease from 3.6 percent in October 2003 (OESC, 2003 and 2004). As of March 2005, the Garfield County labor force was estimated at 27,010, with an unemployment rate of 3.9 percent (OESC, 2005).

In 2003, Garfield County had a per capita personal income of $26,067, which ranked it 10th among Oklahoma counties and at 98 percent of the state average of $26,719. The Garfield County 2003 per capita income increased 3.9 percent from 2002 (BEA 2003a and 2003b). Garfield County's 2003 total personal income was $1,489,318, ranking it 11th among Oklahoma counties. The Garfield County 2003 total personal income increased 3.9 percent from 2002 (BEA, 2003c). Total personal income includes the earnings (wages and salaries, other labor income, proprietors' income); dividends, interest, and rent; and transfer payments received by the residents of Garfield County (BEA 2003d). Earnings by persons employed in Garfield County increased from $950,613 in 2002 to $1,014,276 in 2003, an increase of 6.7 percent (BEA 2003c).

Vance AFB generates economic activity within Garfield County through employee payrolls, local procurements, and other expenditures. The surrounding communities and Vance AFB depend on one another for employment, goods, and services.

Vance AFB lies within the City of Enid. The Base maintains an average daytime base population of about 5,400, including active duty permanent personnel, students, family dependents, civilian contractors, on-base private businesses, and area military retirees. The Base is the region's largest employer, with a combined military and civilian labor force accounting for 11 percent of the area's total payroll. It is also responsible for more than 1,300 indirect employment opportunities. Based on payroll, construction, and operational expenditures, it is estimated that Vance AFB has an annual economic impact on the local community of over $186 million (USAF, 2002a). Other major employers in Garfield County are: Advance Food Company, the Enid School District, and Integris Bass Health Center.

3.1.5 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations encourages federal facilities to achieve "environmental justice" by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. Accompanying EO 12898 was a presidential transmittal memorandum that referenced existing federal statutes and regulations and was to be used in conjunction with EO 12898. One of the items in the memorandum referred to the use of the policies and procedures of NEPA, specifically that, "Each Federal agency shall analyze the environmental effects, including human health, economic, and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 USC Section 4321, et. seq." This section presents relevant Vance AFB data regarding environmental justice, along with an analysis of census reporting areas that would be affected by the Proposed Action and alternatives.

Since the analysis considers disproportionate impacts on populations, two areas must be defined to facilitate comparison: the potentially affected area, and a larger regional area that includes the affected area and serves as a basis for comparison. The "potentially affected area" includes the footprint of potential adverse impacts based on planned activity, and the census tracts that fall within that footprint. The potentially affected community considered under the environmental justice analysis for this EA is the City of Enid. The larger regional area is defined as the smallest political unit that includes the affected area and is called the community of comparison (COC). For purposes of this analysis, the COC consists of Garfield County.

The 2000 Census of Population and Housing includes data on race and ethnicity and poverty status. Based on Census Bureau definitions, the minority population for purposes of this analysis includes Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and Some other race. For the 2000 Census, the federal government considered race and Hispanic origin to be two separate and distinct concepts. For purposes of this analysis, low-income persons are defined as persons with 1999 income below the poverty level. The 2000 Census of Population and Housing defined the poverty level as income below $16,895 for a family of four. These data represent the most current and best available data for computing percent minority population and percent low-income population at the census tract level in the Vance AFB study areas.

Based upon the 2000 Census of Population and Housing, the City of Enid had a minority population of 12.8 percent and a low-income population of 14.8 percent. The COC had a minority population of 11.3 percent and a low-income population of 13.9 percent. In comparison, 23.8 percent of the state of Oklahoma population is minority and 14.7 percent is low-income. Table 3-4 shows the 2000 population, percent minority population, percent low-income population, and total estimated minority persons and low-income persons for each relevant demographic area, including the COC (Garfield County).

Table 3-4. Percent Minority Population and Low-Income Population in Community-of-Comparison (COC) Counties

Demographic Area	Total Population	Percent Minority	Percent Low-Income[a]
City of Enid	47,045	12.8	14.8
Garfield County	57,813	11.3	13.9
Oklahoma	3,450,654	23.8	14.7
USA	281,421,906	24.9	12.4
Total for COC	**57,813**	**11.3**	**13.9**

USCB, 2000
a. Based on 2000 estimates.

3.1.6 Cultural Resources

Regulations and Criteria

Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, establishes Federal agencies' responsibility to preserve and use historic properties in a manner

that is consistent with the agency's mission. The DoD's policy has been to integrate the archeological and historical preservation requirements of applicable laws with the planning and management of activities under the Department's control. In accordance with these responsibilities, the Air Force issued AFI 32-7065, Cultural Resources Management, which provides guidance on developing a compliance-oriented Cultural Resources Management Plan (CRMP).

Cultural resources at Vance AFB are managed in accordance with AFI 32-7065, Cultural Resources Management Program, and with all applicable environmental laws including Air Force Regulation 126-7, Historic Preservation; 32 CFR Part 989; the NHPA of 1966, as amended, and its implementing regulations 36 CFR Part 800; EO 11593, Protection and Enhancement of the Cultural Environment; NEPA of 1969, as amended, and its implementing regulation 42 U.S.C.; the Archaeological and Historic Preservation Act of 1974 ([P.L.] 93-291); the American Indian Religious Freedom Act (AIRFA) of 1978 (P.L. 95-341); the Archeological Resources Protection Act (ARPA) of 1979 (P.L. 96-95); and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (P.L. 101-601) (USAF, 2003a).

Section 2.2.5 of AFI 32-7065 recommends that installations with no known cultural resources prepare abbreviated contingency CRMPs. Since Vance AFB has limited cultural resources, the CRMP is very short and includes: 1) documentation of the Base's cultural resource status; 2) a contingency plan for undiscovered archeological resources; and 3) a description of the cultural resources consultation process. Vance AFB's policy concerning cultural resources is to preserve existing resources and protect newly discovered resources in the future. Cultural resources on Vance AFB are managed through the implementation of the CRMP.

Cultural resources include historic properties (as defined in the NHPA), cultural items (as defined in the NAGPRA), archeological resources (as defined in the ARPA), and sacred sites (as defined in EO 13007, Indian Sacred Sites). Cultural resources are generally referred to as heritage resources. Historic properties are cultural resources that are eligible for listing in the National Register of Historic Places (NRHP).

Numerous laws and regulations require that possible effects on cultural resources be considered during the planning and execution of federal undertakings. These laws and regulations stipulate a process of compliance, define the responsibilities of the federal agency proposing the actions, and prescribe the relationships among involved agencies. In addition to NEPA, the primary laws that pertain to the treatment of cultural resources during environmental analysis are the NHPA (especially Sections 106 and 110), the ARPA, the AIRFA, and the

NAGPRA. Under the AIRFA, Vance AFB has no known traditional cultural or ceremonial sites to which the Base must provide access.

Section 106 of the NHPA requires that federal agencies give the Advisory Council on Historic Preservation a "reasonable opportunity to comment" on the Proposed Actions. Federal agencies must consider whether their activities could affect historic properties that are already listed, determined eligible, or not yet evaluated under the NRHP. Properties that are either listed in or eligible for listing in the NRHP are provided the same measure of protection under Section 106.

The following criteria have been established as guidance for evaluating potential entries to the NRHP. "Significance" in American history, architecture, archeology, and culture is granted to districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- Are associated with events that have made a significant contribution to the broad patterns of history;
- Are associated with the lives of persons significant in history;
- Embody the distinctive characteristics of a type, period, or method of construction;
- Represent the work of a master;
- Possess high artistic values;
- Represent a significant and distinguished entity whose components may lack individual distinction; or
- Have yielded, or may likely yield, information important in prehistory or history.

Existing Conditions

Vance AFB was established in 1941 when the city leaders of Enid, Oklahoma offered a site for military training operations. The base was originally an Army Air Corps Flying School for pilots during World War II. Activated as the Enid Air Corps Basic Flying School, base construction began in 1941. Cadets trained in BT-13s and BT-15s. In 1943, six tracts of land in Alfalfa County became Kegelman Auxiliary Airfield (AAF) and served as a medium bombardment station. Flight training continued until both airfields were deactivated in 1947. Within a year, however, the airfields were reactivated and named Enid AFB under the newly formed military branch known as the United States Air Force. In 1949, the airfield was renamed

Vance AFB after Lieutenant Colonel Leon R. Vance, Jr., a local World War II hero and Congressional Medal of Honor recipient. In 1956, the T-33 single-engine jet trainer ushered in the jet age at Vance, followed by the present day T-37s in 1960 and T-38s in 1963. In 1995, Vance received T-1As, the aircraft selected to train transport and tanker pilots. This acquisition is the first step in a total restructuring of pilot training called Specialized Undergraduate Pilot Training (SUPT) (USAF, 2002b).

Because of shortcomings in training effectiveness, safety, performance, design, and supportability of the T-37 airplanes, in 2002, the Base proposed a plan to convert from using the T-37 aircraft to the T-6A Texan II aircraft. Vance AFB (71 FTW) received the first T-6A aircraft in 2005. The proposed plan is for the Base to operate two flying training squadrons with T-6A aircraft, resulting in the beddown of up to 74 T-6 aircraft. During the transition, the 71 FTW would conduct concurrent T-37 and T-6A training until all T-37s have been retired (USAF, 2002c).

Archaeological Resources

Archaeological research and investigations in Oklahoma and the plains region have resulted in the chronological division of human habitation into five general periods: Paleo-Indian (15,000 – 7,000 BC), Archaic (7,000 BC – AD 1), Woodland (AD 1 – AD 1000), Village (AD 1000 – AD 1550), and Historic (AD 1550 and after). The majority of the state of Oklahoma has not been extensively surveyed for archaeological sites. In the vicinity of Vance AFB, only Osage and Kay Counties have been subjected to extensive archaeological study. Over 8,000 archaeological sites have been recorded in Oklahoma, and it has been estimated that as many as 80,000 archaeological sites potentially exist within the state. The potential for archaeological sites in the Oklahoma region is highest along the rivers and tributaries that exist in the plains areas, and on terraces associated with the mountainous regions in the southeastern portion of the state. Approximately seven percent (546) of the approximately 8,000 identified archaeological sites in Oklahoma are located in Garfield County and the counties surrounding it. These sites are located primarily in proximity to the Cimarron and North Canadian Rivers (USAF, 2002c).

All of the 1,829 acres on Vance AFB have been developed or disturbed by past and present military operations. No unimproved grounds exist within the Base boundaries. A cultural resource assessment was conducted at Vance AFB by a representative of the National Park Service in 1983 as part of an Archaeological Baseline Survey requested by Headquarters Air Education and Training Command (HQ AETC). The assessment included an archaeological

reconnaissance survey, and the identification of buildings and structures built between 1942 and 1950 that could be potentially eligible for nomination to the NRHP. No archaeological resources were identified at the installation. No further work was recommended at Vance AFB due to extensive land disturbance and a low potential for archaeological resources (USAF, 2003a).

In 1988, the City of Enid enlisted the services of Stanley D. Bussey, PhD., to conduct an archaeological survey on the portion of the Baker Tract property that contains the sewer line from Vance AFB to the city. No evidence of historic or prehistoric cultural resources was found on the ground surface, in stream banks, or in back dirt from animal burrows. Furthermore, in 1993, an archaeological survey was conducted on Vance AFB by Steven L. DeVore. DeVore found no evidence of any archeological resources and recommended that no further archaeological work be conducted on Vance AFB (USAF, 2003a).

In March 2003, an EA was completed, which included an evaluation of the impacts to archaeological resources from the construction of 54 new MFH units. The EA determined that there were no known archaeological resources located on Vance AFB or within the proposed MFH expansion area, and that the area where the new units were built was not considered to have a high potential for cultural resources. In addition, the EA stated that the area where the new units were built had already been subjected to heavy disturbance in the past, and was the location of relatively intense military activity prior to the construction of the new units (USAF, 2003a).

The above-mentioned studies, combined with the extensive amount of disturbance in the area proposed for demolition and construction deem it unlikely that any archeological sites, if present, remain identifiable.

Historical Resources

Europeans first entered the Oklahoma area in the 1550s, but no permanent settlements existed until the U.S. Government established the "Indian Territory" in northeastern Oklahoma and began relocating Native Americans from areas to the south and east to that area. The Choctaw were the first of The Five Civilized Tribes (Choctaw, Cherokee, Chickasaw, Creek, and Seminole) that were forcibly relocated to the Indian Territory established in the 1830s and 1840s under the Indian Removal Act. The forced relocation of the Cherokee, Chickasaw, Creek, and Seminole followed soon thereafter, and the effect of this forced relocation on these groups resulted in thousands of deaths, devastated their political and economic systems, raised tensions

among indigenous Native American groups, and resulted in conflicts between Native Americans and Euro-American settlers that lasted throughout the nineteenth century. The Choctaw, Cherokee, and Osage (another tribe located in Oklahoma) were frequently involved in territorial conflicts with each other, and these conflicts increased following the Act of Union, which officially established the boundaries of the Cherokee Nation in 1840 (USAF, 2002c).

The U.S. Government opened up portions of the Indian Territory for homesteading in 1889, and government sponsored "land runs" were used to allow homesteaders to stake their claim on land parcels in the area. The completion of the nationwide railroad system spurred the exploitation of minerals such as coal and oil that had been discovered in the area, and by the early 1900s Oklahoma was the largest producer of crude oil in the southwest. Historical structures in the vicinity of Vance AFB are primarily commercial buildings, as well as a few private homes and ranches that date from the 1890s and early 1900s. The largest concentrations of historical structures in Oklahoma are located in Cherokee, Alfalfa, Okeene, Blaine, Taloga, Dewey, Arnett, Shattuck, and Ellis counties (USAF, 2002c).

A total of 156 industrial buildings and 230 housing units are located on Vance AFB, which encompasses 1,829 acres. Recordation and evaluation of historic buildings and structures at Vance AFB resulted in the identification of two buildings, Building 129 and Building 170, that meet any of the criteria necessary to be considered potentially eligible for nomination to the NRHP, as stated in National Register Bulletin 15 (USAF, 2002b). Level 2 Historic American Building Survey (HABS) documentation was prepared for Building 129 prior to modification, according to the stipulations contained in a Memorandum of Agreement approved by the Oklahoma State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) in 1993. Building 129 is no longer eligible due to modification. At present, Building 170 is the only potentially eligible building at Vance AFB (USAF, 2002b). Neither of these buildings is within the MFH area (USAF, 2003a).

The original 176 MFH units were constructed in the 1960s. They are approximately 43 years old. The new 54 MFH units are currently completing construction. Multiple building modifications have been made to the old units since they were constructed, such as the replacement of flat roofs with pitched roofs, new siding, and the addition of carports. Since these structures are not 50 years old and have undergone major modifications, they are not eligible for nomination to the NRHP. The Oklahoma Historical Society conducted a site visit to Vance AFB on January 27, 2003 to confirm eligibility of the MFH units. As a result of the site

visit, the Oklahoma Historical Society concluded that "none of the facilities, family housing, or the adjacent park and open land to be impacted by any of the MFH projects retain enough historical integrity to be considered for inclusion in the national Register." The entire letter from the Oklahoma Historical Society can be found in Appendix A of this document. The EA concluded that the construction of the new 54 MFH units would have no impact on cultural resources at Vance AFB (USAF, 2003a).

The proposed MFH expansion area (location of current park) contains no structures. It is currently used as a residential playground for Base children. Therefore, no cultural resources exist within the project area that may be impacted by the Proposed Action.

3.1.7 Hazardous Materials and Waste

Hazardous Materials and Hazardous Waste

Hazardous material is defined as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that because of its quantity, concentration, physical, chemical, or infectious characteristics may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous waste is defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that poses a substantial present or potential hazard to human health or the environment.

Issues associated with hazardous material and waste typically center around underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, fuels, and petroleum, oils, and lubricants. When such resources are improperly used, they can threaten the health and well being of wildlife species, botanical habitats, soil systems, water resources, and humans.

AFI 32-7042 Solid and Hazardous Waste Compliance establishes that all installations develop a hazardous waste management program to comply with Federal, State, and local regulations. This program must include a hazardous waste management plan, and provisions for training, characterization, turn-in and disposal, inspections, permits, and record keeping. The DoD also developed the IRP (which has since been renamed the ERP), intended to facilitate thorough investigation and cleanup of contaminated sites located on military installations. These plans and programs need to be in compliance with hazardous waste regulations set forth in

Subtitle C, 40 CFR Parts 260-272, and for solid waste in Subtitle D of 40 CFR Parts 240 to 244, 257, and 258.

Existing Conditions

Hazardous materials use and management at Vance AFB are regulated under the Toxic Substances Control Act (TSCA), the Occupational Safety and Health Administration (OSHA), the Emergency Planning and Community Right-to-Know Act (EPCRA), and Air Force Occupational Safety and Health Standards 127-43. These regulations require personnel using hazardous materials to be aware of the possible dangers, to know the location of material safety data sheets for all hazardous materials they are using, and to wear the appropriate personal protective equipment required for particular hazardous materials. The Vance AFB Environmental Management Office maintains a list of all hazardous chemicals, including appropriate material safety data sheets, if applicable, used on the Base.

Hazardous Materials

Vance AFB uses the Air Force Environmental Management Information System, a hazardous material (HAZMAT) pharmacy system to monitor each individual supply source, providing the command with the location and quantity of hazardous materials. The purchase of products containing Class I ozone-depleting substance (ODS) has been prohibited and the use of Class II ODS has been minimized (40 CFR Part 82). In 1996, Vance AFB achieved a 47 percent reduction in non-fuel purchases of products containing EPA-17 chemicals[1] and chemical compounds compared to the Calendar Year 1992 (CY92) baseline inventory. This continued reduction in the industrial toxics inventory is realized through product substitution and process modifications. Fuels are utilized at Vance AFB for the operation of aircraft, aircraft support equipment, fleet vehicles, electricity generation, and heating. Various fuels, including JP-8 turbine aviation fuel, diesel, and gasoline, are stored and dispensed from USTs or ASTs or dispensed from delivery trucks. In CY01, Vance AFB consumed 537,439 gallons of motor gasoline, 71,899 gallons of diesel, and 17,945,045 gallons of JP-8 (USAF, 2003a).

[1] EPA-17 chemicals, also known as EPA Industrial Toxics Project chemicals, are chemicals targeted for reduction or elimination based on their volume of use, toxicity, persistence, and mobility. These chemicals include benzene, methyl ethyl ketone, cadmium, mercury, carbon tetrachloride, methyl isobutyl ketone, chloroform, nickel, chromium, tetrachloroethylene, cyanide, toluene, dichloromethane (methylene chloride), trichloroethane, lead, trichloroethylene, and xylenes."

Hazardous Wastes

Vance AFB is registered as an industrial large quantity generator and has a Resource Conservation and Recovery Act (RCRA) Part B Post Closure Permit from the ODEQ. Vance AFB maintains a hazardous waste inventory, which is updated annually (USAF, 2001a).

Vance AFB's storage status under Part A Permit No. OK4571524095 terminated on November 8, 1992. Therefore, hazardous waste cannot legally be stored for more than 90 days without a storage permit. Hazardous waste generated and collected from satellite accumulation points are stored for pick-up by the Defense Reutilization and Marketing Office (DRMO) contractor in the Vance AFB less-than-90-day Hazardous Waste Storage Facility, Building No. 250. Hazardous waste collected from IRP activities is transported to a permitted transportation, storage, or disposal facility by contractor. Vance AFB is operating the Hazardous Waste Storage Facility (Bldg 250) as a Less Than 90 Day Storage Facility with approval from the ODEQ (USAF, 2001a).

Vance AFB has reduced off-base transfers of hazardous waste by implementing recycling initiatives, product substitutions, process modifications and equipment purchases. Cleaning solvents, used engine oils, hydraulic fluids, off-spec fuel oils, and lead-acid batteries are transported to off-base recycling facilities. Waste anti-freeze is recycled in a batch distillation unit located in the Vehicle Maintenance Shop. For CY00, approximately 13,682 pounds of hazardous waste from Vance AFB were transported off base for disposal. This is a 91 percent reduction from the CY92 baseline of 151,173 pounds. In addition, since 1992 Vance AFB has been considered free of all materials containing polychlorinated biphenyls (PCBs) (USAF, 2003a).

Based on information gathered during the Environmental Baseline Survey (EBS), evidence indicates that, other than typical limited quantities associated with residential uses, no hazardous materials, hazardous wastes, or petroleum substances are used, stored, or disposed of at the MFH area. Storage of gasoline or other flammable materials, such as thinner and paints, is limited to no more than three gallons, and discharge of automotive chemicals and grease to plumbing, the drainage system, trash, or the ground is prohibited. Additionally residents are not allowed to perform major vehicle repairs or maintenance activities within the MFH area, but are encouraged to use the Auto Skills Center. Additionally, no IRP sites have been identified within the boundaries of the MFH area. No substantial excavation, quarrying, and/or land disturbance activities have ever taken place within the MFH area boundaries (USAF, 2005).

Asbestos

Based on information gathered during the site reconnaissance for the EBS conducted in 2004, asbestos-containing material (ACM) is present in the existing 176 inadequate MFH units (USAF, 2005). Non-friable asbestos wallboard is believed to be present at each unit. An asbestos survey conducted in 1991 indicated that the following materials at the housing units might be asbestos containing: mastic for the floor tiling; floor tiles and baseboards; drywall and joint compound; transite; and caulking. Each instance of ACM found was given a priority rating of 6, which indicates that no immediate action was necessary (BCM Engineers, 1991)[2]. The asbestos transit in utility rooms was observed during the site reconnaissance for the EBS and appeared to be in good condition. Additionally, main water distribution lines in the housing area are also likely constructed of transit cements (Burnett, 2004).

The Vance AFB Asbestos Management Program is designed to minimize the risk of exposure to asbestos fibers for those who work and live on Vance AFB. This program is comprised of the Asbestos Management Plan (AMP), the Asbestos Operating Plan (AOP), and the Asbestos Survey Report (ASR) and Database System. The AMP, updated in April 2001, is a comprehensive policy document that specifies work to be accomplished and assigns various base offices responsibility for the work. Other components of the AMP include a record retention system and a regulatory review covering applicable federal, state and Air Force regulations. This plan indicates that residents must be notified of the presence of non-friable asbestos in the utility room and notification is to continue until ACM has been removed from all housing units (USAF, 2001b). Residents are notified of ACM present in the housing units and are cautioned not to cut, grind, or drill through the wallboard in the utility room (USAF, 2003b).

The 176 inadequate MFH units were randomly tested for ACM or suspect material. The results concluded that ACM was present in pipe insulation located in the utility closets and some floor tiles throughout the housing units. Since ACM is currently present at the subject properties, should demolition, reconstruction, and/or renovation activities occur, asbestos remediation/management must be considered. Additionally, any asbestos waste generated from the subject properties must be managed in accordance with all local, state, and federal regulations (USAF, 2005).

[2]" ACMs were assessed with the GRADE algorithm, which classifies materials into six priorities and assigns a response to each priority. The response for each of the six GRADE priorities includes: 1) immediate removal; 2) removal as soon as possible; 3) planned removal; 4) repair; 5) monitoring; 6) no immediate action is necessary; 7) priority 6-non-friable; and 8) non-ACM.

Lead-Based Paint

The toxic effects of lead on human beings have been known for many years. Acute overexposure to lead can kill in a matter of days. Chronic overexposure to lead in adults may result in severe damage to the blood-forming organs, and the nervous, urinary, and reproductive systems. Children are the most severely affected by lead exposure and this is why, lead in MFH can be a concern. The frequency and severity of medical symptoms increases with the concentration of lead in the blood. The major source of lead for most adults is occupational exposure. For children, the primary sources are lead-based paint, drinking water, soil, and dust. In the Air Force, operations involving potential exposure to lead include maintenance, renovation and abatement work, corrosion control, welding, and cable maintenance operations. Workers who may be exposed to lead include abrasive blasters, inspectors, painters, communication technicians, and welders (USAF, 2001c).

Regulatory efforts to reduce use of lead-based paint (LBP) began in 1971 with the enactment of the Lead-Based Paint Poisoning Prevention Act (LBPPPA). In 1978, the Consumer Product Safety Commission banned the use of paint containing more than 0.06 percent lead by weight on interior and exterior residential surfaces, toys, and furniture. House Report 102-95 accompanying the Defense Appropriations Act of 1992, directed the DoD to take a more active role in ensuring that military dependent children are not affected by LBP. In response to this directive, DoD issued a policy memorandum on LBP in November 1992. This policy required DoD components to develop an LBP risk assessment, screening, and control program. The Air Force Policy and Guidance on Lead-Based Paint in Facilities and the Child Blood Lead Screening Program implement this DoD Policy.

The LBP Management Program at Vance AFB is managed in accordance with the Air Force LBP Policy. The LBP Management Plan, updated in March 2001, provides guidance in preventing health and environmental hazards as a result of LBP exposure. This plan outlines the policy and procedures to be followed in conducting the surveying, sampling, analysis, and abatement of LBP-contaminated materials (USAF, 2001c).

Based on interviews conducted during the EBS, a LBP survey was conducted in 1995. This survey identified the presence of LBP in beams and columns, exterior trim, exterior window frames, exterior fences, paneling, wall/sheetrock, shelf supports, door frames, doors and ceilings. LBP was also identified in the playground in the 10-acre tract south of the MFH area. Since the survey, LBP components may have been replaced in some units, but the primary management

method for LBP has been encapsulation. The 1995 survey also indicated that LBP on playground equipment had been removed (USAF, 2005).

Vance AFB notifies new residents of the possible presence of LBP in the housing units in the Vance AFB Family Housing Brochure, which is provided to each residential family. Additionally, a map is provided to residents that identifies the locations where LBP has been found (Ireland, 2004).

The condition of interior and exterior paint was observed during the 2004 site reconnaissance conducted for the EBS and appeared to be good throughout. Additionally, playground areas were observed, and no peeling paint was observed in these locations.

Information obtained during the interviews conducted for the EBS indicated that, during the previous LBP removal activities, scrapings and/or other paint dust were captured for disposal (Patton, 2004). However, it is likely that historically paint scrapings and residues during repainting/maintenance activities may not have been captured. Soil samples have been collected from several locations within the MFH area as part of the 1995 LBP survey, and no lead contamination was found (Galson, 1995). LBP or dust on/in housing units and potential lead hazards in soil should be considered in the event of potential exposure to residents and child-occupants (USAF, 2005).

Future demolition and construction projects at Vance AFB associated with the Proposed Action, will need to include LBP abatement and any LBP waste generated must be managed in accordance with all local, state, and federal regulations. In addition, a detailed LBP survey will be necessary before initiating demolition and construction work.

Radon

Radon is a naturally occurring radioactive gas found in soils and rocks, and originates from the natural decay of radium. Radon is an odorless, colorless gas believed to be harmful at all exposure levels. Studies by the USEPA have shown an increased risk of developing lung cancer when exposed to elevated levels of radon. The USEPA has established a guidance level of 4.0 picocuries per liter (pCi/L). Concentrations above this level are thought to represent a health risk. There have been no standards established for commercial or industrial structures. Once inside an enclosed space, radon can accumulate, and there is an increased risk of

developing lung cancer when exposed to elevated levels of radon. In general, the risk increases as the level of radon and the length of exposure increase.

Based on the USEPA Radon Zone Map for Oklahoma, Garfield County is categorized as Zone 3, meaning there is a low potential for radon with predicted indoor radon accumulations of less than 2.0 pCi/L (USEPA, 2004). According to the March 2005 EBS, 17 sites with a zip code of 73703 have been tested in Garfield County, with 94% of the samples exhibiting radon levels below 4.0 pCi/L. Six percent of the sites exhibited radon levels from 4 to 20 pCi/L. For the sites tested, average radon activities were reported as 1.647 pCi/L in first floor living areas and 1.267 pCi/L in basements. According to the March 2005 EBS, radon testing was performed in 1993 at the MFH area. Only one result exceeded 4 pCi/L at a concentration of 4.3 pCi/L. However, a confirmation radon sample was collected from that unit with results indicating concentrations below 4 pCi/L. Therefore, since survey results did not indicate radon as a potential concern and the Base is in a zone with a low radon potential, radon does not appear to present an environmental risk in the MFH units at Vance AFB (USAF, 2005).

Pesticides and Herbicides

Based on the March 2005 EBS prepared for the MFH area property, there is no evidence to indicate that pesticides were stored, manufactured, or disposed of at the MFH area. However, historic applications of pesticides via sub-slab injection have occurred at the subject property for pest control prior to the mid-1980s (USAF, 2005).

Although currently banned, pesticides such as chlordane and dursban have historically been used in the housing area. From 1977 to 1980, chlordane was injected beneath foundations of housing units from the outside to treat for termites. Chlordane was last used in 1982 at a 1% solution. The original housing units were constructed with flat "built up" style roofs, and ventilation ducting was located in the foundation. Application of chlordane beneath the foundations was determined to create indoor air quality concerns via the sub-grade ducting. As a result, renovations to all housing units were performed where peaked roofs were added to create attic space, and the ventilation ducting was relocated above grade in the attics. The original sub-grade ducting was cemented in place. Dursban has also been used on Base in spot treatment applications, but was last used in 2002. Due to the persistence of chlordane in the environment and known historical use, there is a possibility that concentrations of chlordane may be present in soils at the MFH units. No sampling to test for the presence of pesticides in soil has been conducted in the MFH area (USAF, 2005).

Prior to development, the MFH area may have been cultivated for agricultural purposes. Crops in the area have primarily consisted of wheat. Pesticides for wheat cultivation were reportedly used in limited quantities in the area; however, it is unknown exactly which pesticide treatments could have been used historically (USAF, 2005).

Current pesticide usage at the MFH area includes spot treatment and direct application to infested or problem areas. According to the March 2005 EBS, the Base does not apply herbicides in the housing area; however, residents are allowed to use commercially available products or can subcontract lawn care. Residents are also allowed to apply insecticides for minor pest control at their unit using commercially available products or products from the Self Help store, and they may also subcontract pest control services for non-structural applications. Pest control contractors are required to provide information regarding treatments and products used to Entomology for incorporation into Base reports. Current and historical use of pesticides has been in accordance with manufacturer's instructions using products commercially available at the time by state-certified applicators (USAF, 2005).

According to the Lead Entomologist interviewed in 2004, the pesticides currently used at the subject property include:

- Borid
- Premise
- Maxforce® Ant Bait
- MaxForce® Roach Bait
- Victor
- CB-80 Extra
- Tempo 20WP
- Termidor 80WG
- Termidor SC

Pesticides can degrade over time, and applications associated with agricultural use of the property would have ceased after development of the property for non-agricultural use. However, additional ongoing use of a variety of commercially available pesticides for residential purposes has continued to the present. Some of the chemicals historically used for agricultural as

well as residential pesticide applications may be more persistent in the environment (e.g., chlordane). Therefore, residual levels of pesticides and/or their by-products may be present in soils in the MFH area (USAF, 2005).

Based on the 2004 visual inspections conducted for the EBS, there is no evidence of a release or spill of pesticides at the MFH area, and it is assumed that these substances were used according to manufacturer's instructions. However, the possible presence of these types of chemicals in soil must be considered should future activities in the housing areas include earth-moving or disturbance (USAF, 2005).

Polychlorinated Biphenyls

Vance AFB has been considered "PCB-free" since 1992 (USAF, 2002a). Observations made during the 2004 site reconnaissance for the EBS indicated that all current transformers on the MFH area are pad-mounted, and no evidence of leaking, staining, or stressed vegetation was observed. None of the transformers observed were labeled as to their PCB status but appeared to be in good condition. Originally, transformers were pole-mounted, but a renovation project in 1988 was performed to install all electric utility lines underground with pad-mounted transformers (USAF, 1988). Due to the age of the housing area, historic transformers may have contained PCBs. Based on the March 2005 EBS, there is no evidence to indicate that other types of PCB-containing equipment has been stored or disposed of at the MFH area. Additionally, there is no evidence that releases of PCBs have occurred at the MFH area (USAF, 2005).

Fluorescent lighting, which may contain limited amounts of PCBs in older ballasts, was observed in the kitchens of the housing units during the 2004 visual inspection conducted for the EBS. The capacitor in fluorescent lighting ballasts could contain PCBs if manufactured prior to 1978. Although only a small amount of PCB fluid may be present in the capacitor (approximately 1 to 1.5 ounces), the fluid could contain up to 100% PCBs. Proper handling and disposal of fluorescent lighting ballasts must be conducted in accordance with all local, state, and federal regulations (USAF, 2005).

Environmental Restoration Program

The DoD implemented the Environmental Restoration Program (ERP) to identify the locations and contents of past toxic and hazardous material disposal and spill sites and to eliminate the hazards to public health in an environmentally responsible manner. This program was formerly knows as the IRP. Consequently, sites identified under this program at Vance AFB

are referred to as IRP sites. The objectives of the ERP are to identify and fully evaluate any areas suspected of being contaminated with hazardous materials remaining from past Air Force operations. The ERP is the basis for response actions on Air Force installations under provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the Superfund Amendments and Reauthorization Act (SARA) of 1986, as clarified in 1991 by EO 12580, Superfund Implementation.

According to the Vance AFB General Plan updated in April 2002, 25 IRP sites have been identified on Base since implementation of the program. A summary of the status of these sites is presented in Table 3-5.

Table 3-5. Summary of IRP Sites at Vance AFB

Status	Number of Sites
No Further Response Action Decision Documents and Regulatory Concurrence	6
No Further Response Action Decision Documents and Regulatory Concurrence with Semi-annual Monitoring	4
No Further Response Action Decision Documents Awaiting Regulatory Concurrence	6
Corrective Measures and Long-term Monitoring	4
Awaiting Remedial Action	5
Total Number of IRP Sites	**25**

The Proposed Action does not include any properties that have been identified as IRP sites in previous records searches or other classification studies. Historical aerial photographs and topographic maps of the properties do not indicate that substantial excavation, quarrying, and/or other land disturbance activities have ever taken place within the MFH area boundaries (USAF, 2005). Because current plans and procedures are in effect to properly handle potential contaminants and there are no IRP sites located in the MFH area, analysis of IRP sites will not be carried forward.

Other Compliance Sites

Based on the March 2005 EBS, there is no evidence to indicate presence of ASTs, USTs, crude oil or product pipelines, hydrant fueling systems, transfer systems or oil/water separators in the MFH area.

3.1.8 Infrastructure/Utilities

Sanitary Sewer

Sanitary sewage from Vance AFB, including MFH, currently discharges to the City of Enid's Publicly Owned Treatment Works (POTW) sewage treatment facility. Based on the March 2005 EBS, there is no past or current evidence of wastewater being stored and/or disposed of on the MFH area; however, there is a lift station within the MFH area that is necessary to connect the family housing sewage lines to the main Base system. According to the March 2005 EBS, no septic systems have been present at the MFH area.

The sewer system within the housing area is reportedly in excellent condition and the mains have been lined and sealed. Also, all sewer lines from housing units have been replaced with polyvinyl chloride (PVC) (USAF, 2005).

Potable Water

Drinking water for Vance AFB is provided by the City of Enid, and is derived from five water supply wells from a well field located approximately 20 miles southwest of Enid (USAF, 2003a). Sources for drinking water for the City of Enid include the Enid Terrace, Cimarron Terrace, and Cedar Hills Aquifers. The water is treated at the municipal water plant and enters the Base on the north side, near the Industrial Gate, through a 10-inch supply main. Potable water is stored on Base in a 500,000-gallon elevated tank and a 300,000-gallon aboveground tank. Drinking water is sampled monthly and water quality reports are prepared annually. Water quality is currently considered to be in compliance with all drinking water standards (USAF, 2003a).

Solid Waste

Municipal solid waste management and compliance requirements at Air Force installations are established in AFI 32-7042, Solid and Hazardous Waste Compliance. AFI 32-7042 incorporates by reference the requirements of RCRA Subtitle D, 40 CFR 240 through 244, 257, and 258, and all other applicable federal regulations, AFIs, and DoD directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and recycling of solid waste, as addressed in AFI 32-7080, Pollution Prevention Program.

All municipal solid waste generated at Vance AFB, including residential municipal waste, is removed by contractors and subsequently disposed of at the Enid municipal landfill. The landfill accepts approximately 6,000 to 8,000 tons of solid waste a month (USAF, 2003a).

Air Force policy requires that all installations strive to reduce the generation of solid waste and that collection, disposal, and recovery programs be implemented in a cost-effective and environmentally acceptable manner. Air Force solid waste disposal systems are to be designed as total systems that consider the relative economic advantages of the latest technologies as well as the potential for resource recovery (USAF, 2002d). Installation solid waste management plans are to be developed considering the following hierarchy:

- Source reduction
- Recycling
- Composting
- Energy recovery
- Contained disposal.

As a result, recycling is encouraged at Vance AFB. Coordination and operation of recycling efforts are the responsibility of the Civil Engineer Environmental Branch, which provides semi-weekly pickup of on-base materials and yard waste. The success of Vance AFB's recycling program is achieved through the collaborative efforts of the local community, tenants, contractors, and military organizations across the Base (USAF, 2002a).

Based on the March 2005 EBS, there is no evidence that any other solid wastes have been stored or disposed of at the MFH area. No stressed vegetation was observed during the site reconnaissance conducted for the EBS.

Drainage

The base is subdivided into 10 stormwater drainage areas. Stormwater generated in these areas is channeled through a series of open ditches and underground stormwater lines to one of seven outfalls from the base. The storm drainage system is made up of about 23 miles of underground collection pipes and manholes. A majority of the system, approximately 80 percent, consists of the original vitrified clay pipe. Other sections of this system have recently been enlarged to handle runoff from a 100-year storm and are constructed of concrete. The

overall condition of the storm drainage system is considered to be good. To ensure the quality of stormwater runoff being discharged off Base, monitoring and sampling of stormwater from outfall discharge points are conducted on a regular basis under the supervision of Bioenvironmental Engineering. Several measures such as prescribed storage and materials handling, containment dikes around storage areas, a spill retention sluice gate with back-up inflatable bladder, appropriate pesticide applications, oil/grease/sediment interceptors, and paved surface sweeping have been implemented as part of the 2000 Stormwater Pollution Prevention Plan used to minimize runoff contamination (USAF, 2003a).

Vance AFB has an active stormwater discharge permit issued by ODEQ under the Oklahoma Pollutant Discharge Elimination System (OPDES). After issuance of the permit in 1998, permit-specific sampling was conducted quarterly at three outfalls in fiscal year 1999 and in alternating years thereafter. Due to industrial activities associated with the flight mission at Vance AFB, the Base has been issued a General Permit for Storm Water Discharges Associated with Industrial Activities. Industrial wastewater discharges receive primary treatment at a pre-treatment facility prior to being discharged to the Base sanitary sewer system. Flow in the storm drainage and sanitary sewer lines from the industrial areas is away from the MFH area. Only residential discharges to the sanitary sewer system occur within the MFH area. At this time, water discharges from the storm drainage and sanitary sewer systems are not considered to pose environmental risk to the MFH area (USAF, 2005).

Transportation

The Base road network consists of over 21 miles of roads and approximately 218,000 square yards of paved parking lots. Over 80 percent of the Base pavement is in good condition. However, Elam Road is in very poor condition as it is used as a construction route, and Brown Parkway, Young Road and other bituminous roads have significant surface deterioration (USAF, 2002a).

Some access streets near the Base become congested during peak traffic times. During peak traffic times, access to Vance AFB is influenced by heavy traffic at both gates. The main gate (Hairston Gate) is open 24 hours a day, 7 days a week. The west gate (Industrial Gate) is open only Monday through Friday from 6:00 a.m. to 5:30 p.m. According to the Gate Security, Safety, and Capacity Engineering Study conducted in January 2004, the maximum entry volume observed at the west gate was 348 vehicles per hour per lane, while the maximum entry volume at the main gate was 355 vehicles per hour per lane. The peak 15-minute traffic volume counts

at each gate indicated 101 and 106 vehicles processed at the west gate and at the main gate, respectively, between 7:15 and 7:30 a.m. The street system handles the traffic well during non-peak times. No scheduled on-base shuttle bus service is available for transporting personnel around the Base (USAF, 2004).

Electricity/Natural Gas

Electricity is provided to Vance AFB by Oklahoma Gas and Electric (OG&E), and natural gas is supplied by Oklahoma Natural Gas (ONG) (USAF, 2005).

The four-inch high pressure, 200 pounds per square inch (psi), natural gas supply line enters a master metering station on the north side of the Base near Hairston Gate (main gate). The Base distribution system contains approximately 13 miles of mains and is arranged in a dual looped configuration. The main cantonment area is in its own loop configuration as is the housing area. However, both systems are interconnected allowing the capability to isolate either area. The housing area is metered separately from the main base. Basewide gas pressure is normally maintained at 16 psi. Most of the original distribution system is still in use today. The main distribution lines are all steel pipe with a coated and wrapped covering. All lines within the distribution system are cathodically protected. About 30 percent of the service lines have been replaced with polyethylene line. All Base regulators need to be replaced and 29 valves have been identified to be replaced (USAF, 2002a). Approximate consumption of natural gas at Vance AFB was 83,474 thousand cubic feet (kcf) for FY04, while consumption by MFH units was approximately 14,897 kcf (Hoffman, 2005).

Electrical service is purchased and delivered to a main distribution switching station, located along the north end of the installation directly west of Hairston Gate. This station was upgraded in 1990 to include underground feed and five new switches with a bypass switch. With primary power of 12,500 volts, electrical service is distributed through five circuits to various parts of the Base. The family housing area consists of all underground electric lines served by Circuit 5. The electrical distribution system consists of approximately 51 miles of overhead and underground electrical lines. About 65 percent of the system is underground. The Base plans to convert to a complete underground distribution system. Underground systems improve reliability by lessening vulnerability to wind, ice, and lightning damage, and increase base beautification by eliminating overhead utility lines. The present condition of the system is considered to be satisfactory. Electrical consumption for Vance AFB for FY04 was

approximately 27.3 megawatt hours (MWH), while consumption for MFH was approximately 2.3 MWH (Hoffman, 2005).

3.1.9 Earth Resources

An area's geological resources typically consist of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geological resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The term soil generally refers to unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil depth, structure, elasticity, strength, shrink-swell potential, and erodibility determine a soil's ability to support man-made structures and facilities. Soils typically are described in terms of their series or association, slope, physical characteristics, and relative compatibility or constraints in regard to particular construction activities and types of land use.

Topography is defined as the relative position and elevations of the natural and/or man-made features of an area that describe the configuration of its surface. An area's topography is influenced by many factors, including human activity, seismic activity of the underlying geological material, climatic conditions, and erosion. Information about an area's topography typically encompasses surface elevations, slope, and physiographic features (i.e., mountains, ravines, or depressions).

Physiography and Topography

Vance AFB is located in the north central portion of the Red Bed Plains in the Osage section of the Central Lowlands physiographic province. The Red Bed Plains is a large area of moderately rolling plains developed on thick masses of Permian Age (286 to 245 million years ago) sedimentary bedrock. The plains are dissected at intervals by shallow stream valleys, which typically have a relief of less than 50 feet. The greatest relief of approximately 150 feet is found along the larger streams (USAF, 2003a). The topography in this area is described as flat to gently rolling. The terrain generally slopes to the north, except for the southern end of the Base, which drains to the south and southeast. Elevations range from a high point of 1,310 feet on the southwest corner of the Base to a low point of 1,254 feet at the north end of the annex (USAF, 2002a).

Geology

The bedrocks underlying Vance AFB consist of Permian Age (286 to 245 million years ago) continental red bed deposits. The top geologic formation beneath the soil mantle is the Cedar Hills Unit. The Permian rocks form long, parallel belts of outcrops that extend without interruption from southwestern Nebraska across Kansas into south central Oklahoma, and dip westward at a low angle (about 20 to 30 feet per mile). This structure has been termed the Prairie Plains homocline. The Permian beds underlying the Base consist of nonmarine deposits of the Hennessey shale formation. Hennessey shales consist of interbeds of clay sands, weakly cemented sandstone, and shale, all red to reddish-brown in color. Overburden soils are red to reddish-brown in color with occasional open fractures and an occasional clay seam. The underlying base is a red shale or sandstone, known as siltstone, which is basically a soft rock. The sandstone is of Permian origin and is found at depths ranging from 10 to 20 feet. The underlying sandstone is reddish-brown in color with occasional open fractures and an occasional clay seam (USAF, 2003a).

Soils

Generally, the soils at Vance AFB are a fine sandy loam of medium fertility, gently rolling, and well drained. The soils are principally residual (weathered-in-place) derivatives of the parent formation as modified by decayed vegetation, leaching, and sometimes (locally) by wind and/or erosion or deposition. The gently rolling terrain is also of medium to high susceptibility to wind and water erosion. The soils here, other than the topsoil, are characteristic of those derived from shales and are moderately to fairly active. As such, they can be expected to exhibit considerable volume change with periodic changes in moisture content. Below a certain level the soils grade less plastic (less active) with depth until they become characteristic of the parent siltstone beneath (USAF, 2003a).

The dominant soil composition in the general area of the MFH units consist of soils designated by the United States Department of Agriculture (USDA) as Kirkland-Bethany-Tabler. These soils consist of a deep silt loam surface layer with clayey subsoils. These soils are moderately well to well drained, are fine-grained, and have an intermediate water-holding capacity.

- **Bethany Series.** The Bethany series consists of deep, medium textured, nearly level soils of the uplands. This surface layer is a dark-brown or dark grayish brown, slightly acid, moderately permeable, friable silt loam of granular structure. The subsoil is a brown or dark-brown, mildly alkaline clay ranging from 24 to 36 inches

in thickness. The layer immediately below this is a massive silty clay loam or clay loam at depths ranging from 42 to 54 inches. It is somewhat more permeable and calcareous than the subsoil. Bethany soils are associated with the Kirkland and Tabler soils, but are better drained and have a thicker surface layer.

- **Kirkland Series.** The Kirkland series consists of deep, dark-colored, nearly level to very gently sloping soils that formed in alkaline reddish clays or shales. These soils are on uplands in the eastern part of the county. The surface layer is a dark brown, slightly acid, friable, granular silt loam. This layer is generally about 12 inches thick, but ranges from 8 to 14 inches. The surface layer rests abruptly on the subsoil, which is dark-brown, very slowly permeable, blocky clay about 32 inches thick. The subsoil is moderately alkaline and extremely hard when dry. The substratum is a yellowish-red, massive clay that is slightly more permeable than the subsoil. Kirkland soils are moderately well drained, but tend to be somewhat droughty in dry periods.
- **Tabler Series.** The soils in this series are found in nearly level areas or slight depressions on the uplands. They are deep, medium textured, and moderately well drained. The surface layer is gray silt loam about 8 inches. It is a moderate or weak, fine granular structure. This layer is permeable and easily penetrated by plant roots. It is medium to slightly acid. Immediately beneath the surface layer is a transitional zone, which is a layer of gray, heavy silt loam about 2 to 4 inches thick. The subsoil, a gray clayey layer 36 inches thick, begins abruptly at a depth of 12 inches. The layer is mottled indicating poor internal drainage. The substratum is similar to the subsoil but is structureless, less mottled, and moderately alkaline to calcareous. This layer is at a depth of about 48 inches (USAF, 2003a).

Soils along the western edge of the MFH area fall within the Grant-Pond Creek soil association, which is characterized by deep, loamy soils. These soils generally contain high amounts of organic matter, are well drained, and have a high capacity for water retention (USAF, 2005). These series are described below.

- **Grant Series.** The Grant series are deep and well drained soils on nearly level to deeply sloping uplands. They formed in loamy soils rich in plant nutrients. The capacity to take in and hold moisture is high. Their surface layer is a reddish-brown moderately permeable silt loam about 16 inches thick. The subsoil is a heavy, neutral to mildly alkaline silt loam.
- **Pond Creek Series.** The Pond Creek series are deep, well drained soils that form in calcareous loess on the uplands. They are more nearly level than the Grant series and slightly finer textured in the lower part.
- **Nash and Kingfisher series.** The Nash and Kingfisher series are minor soils in this association. The Nash soils are moderately deep, well drained upland soils that formed in material derived from weakly consolidated, interbedded sandstone and siltstone. Kingfisher soils are deep, well drained soils on gently to strongly sloping uplands.

Depth to the water table within the MFH area should be greater than 6 ft (EDR, 2004). Surface drainage is slow, and very little moisture is lost through runoff, except during intense rains (USAF, 2003a).

3.1.10 Water Resources

Water resources include surface water, groundwater, and floodplains. This section identifies the quantity and quality of the resource and its demand for potable, irrigation, and industrial purposes.

Surface Water

Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater flows, which are increased by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Stormwater also is important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams.

Vance AFB lies within the Arkansas River basin and the Cimarron River subbasin. No naturally occurring lakes are located in the region. Major water features in the region include two artificial lakes and four major rivers. Canton Lake is a 7,900-acre impoundment located 60 miles southwest of the Base. The Great Salt Plains Reservoir is about 35 miles to the northwest and is approximately 9,300 acres in size. The four rivers of the region include the Canadian River, the Cimarron River, the Chikaskia River, and the Salt Fork River. All of these waters discharge into the Arkansas River, which flows into the Mississippi River and finally into the Gulf of Mexico. Hackberry Creek is located approximately two miles southeast of the Base, and Boggy Creek is about one and a half miles to the north. Meadowlake, a small surface impoundment discharges into Boggy Creek. Both creeks feed into Skeleton Creek, which eventually discharges into the Cimarron River (USAF, 2002a).

Surface water quality of the streams in the vicinity of Vance AFB is characterized as being of good quality, with low sulfate and chloride concentrations.

Groundwater

Groundwater resources consist of subsurface hydrologic resources of the physical environment. Groundwater is an essential resource often used for potable water consumption,

agricultural irrigation, and industrial applications. Groundwater typically may be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Vance AFB is situated within the north-central portion of the Redbed Plains in the Osage Section of the Central Lowlands physiographic province. Large terrace deposits underlie the Enid area with the predominant surface geology at Vance AFB and the surrounding areas comprised of unconsolidated clay and silty clay overburden deposits overlying Permian-age consolidated bedrock units of shale, siltstone, and very fine-grained sandstones (USAF, 2005).

Three major hydrogeologic units underlie the area within the terrace deposits. The shallow aquifer is found in the lower section of the unconsolidated overburden and upper section of the bedrock. Groundwater in this shallow aquifer is unconfined with depths to the water table ranging from approximately 8 to 25 feet below ground surface and flow to the east-northeast. The second aquifer is found in bedrock and is separated from the shallow aquifer by approximately 10 feet of shale. This second aquifer is also unconfined with flow to the north-northeast. A third aquifer underlies the upper two aquifers at depth within the bedrock units.

Public water supply is derived from these three aquifers. According to Enid water production plant personnel, the number of wells installed in the area are capable of producing 25 million gallons per day (gpd), and local consumption averages approximately 9 to 10 gpd. Vance AFB receives all of its water supply from the City of Enid.

The USEPA regulates lead in drinking water. Lead contamination generally occurs due to corrosion in household plumbing components, and cannot be directly detected or removed by the water system provider. Therefore, the USEPA requires water systems to control the corrosivity of supplied water in the event that lead levels at home taps exceed an action level of 15 µg/L. This is the level that the USEPA believes water systems can reasonably attain, given present technology and resources, should lead occur in drinking water at their customers home taps. Potential sources of lead in drinking water include lead piping, solder, and other lead containing components of a drinking water distribution system. Older buildings and water distribution systems are more likely to have lead components than those of more recent construction. Due to the age of the units and the presence of copper tubing observed during the EBS, there is a possibility for lead solder to be present on any copper lines into the MFH units (USAF, 2005).

Information obtained during the EBS indicated that Vance AFB routinely collects samples of drinking water from the MFH area for testing. Sample results from September 1997 indicate that drinking water samples were collected from five housing units and were analyzed for the presence of lead and copper. Of those samples collected, only one showed a lead concentration above the action level. Samples collected from this location the following month still indicated a lead concentration above the action level, but samples from November 1997 returned results just under the action level (Accurate Labs, 1997). That housing unit has since been demolished. According to the March 2005 EBS, there have been instances of potential elevated copper and lead concentrations in drinking water samples collected from the Base. However, it has been speculated that the cause of the elevated results may be associated with inappropriate sampling methodology. After re-sampling using correct protocols, results have been below maximum concentration levels (MCLs) and action levels. According to the March 2005 EBS, there are no known problems with lead in drinking water or concerns regarding plumbing components and their potential to affect drinking water in the housing area (USAF, 2005).

Although groundwater contamination is located on Vance AFB property, the groundwater contamination plumes have been delineated and are at distances greater than ¼ mile from the MFH area. Groundwater contamination at Vance AFB is being actively addressed under the ERP. Shallow affected groundwater is not used for drinking water or irrigation, so it is unlikely that residents in the MFH area would be exposed to the contamination. No groundwater monitoring wells are present within the MFH area (USAF, 2005).

Floodplains

Floodplains are areas of low-level ground present along a river or stream channel. Such lands may be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding is influenced by local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which evaluates floodplains for 100- and 500-year flood events. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities in order to reduce the risks to human health and safety and minimize cost to replace or repair repetitively damaged infrastructure (USAF, 2003a).

EO 11988, Floodplain Management, directs federal agencies to provide leadership and take action to reduce the risk of flood loss; to minimize the impact of floods on human safety,

health, and welfare; and to restore, preserve, and enhance the natural and beneficial values served by floodplains. The EO states that an agency shall avoid undertaking or providing assistance for new construction located in floodplains and that if the head of the agency finds no practicable alternative to such construction, the Proposed Action must include all practicable measures to minimize harm to floodplains that may result from such use.

Personnel interviews conducted for the EBS indicated that there are no known wetlands or floodplains within the MFH area boundaries, but flooding in the northeast end of the MFH area may have occurred in 1973 during a 100-year flood event. According to the Environmental Data Resources, Inc. (EDR) report obtained for the EBS, neither a 100-year nor 500-year floodplain is present within the MFH area. A Flood Insurance Rate Map (FIRM) from Federal Emergency Management Agency (FEMA) was viewed for the area and the boundaries of flood zones do not extend to the MFH area (USAF, 2005). As a result, the analysis of floodplains will not be carried forward.

3.1.11 Biological Resources

Biological resources include native plants and animals, and their habitats. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered species by the US Fish and Wildlife Service (USFWS) or a state. Determining which threatened and endangered species occur in an area affected by a Proposed Action may be accomplished through literature reviews and coordination with appropriate federal and state regulatory agency representatives, resource managers, and other knowledgeable experts. In addition to vegetation and wildlife, this section addresses resources for which there are specific legal protections in laws other than NEPA, including threatened and endangered species and wetlands.

Under the Endangered Species Act (ESA) (16 U.S.C. 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the Act (USAF, 2003a).

Although Oklahoma does not have an endangered species act, the state has several provisions under which threatened and endangered wildlife can be classified based on scientific criteria. The Oklahoma Permanent Statutes define endangered wildlife species as "any wildlife species or subspecies in the wild or in captivity whose prospects of survival and reproduction are in immediate jeopardy and includes those species listed as endangered by the federal government, as well as any species or subspecies identified as threatened by Oklahoma statute or Commission resolution" (Oklahoma Permanent Statutes §29-2-109). The Oklahoma Permanent Statutes define threatened wildlife species as "any wildlife species or subspecies in the wild or in captivity that, although not presently threatened with extinction, are in such small numbers throughout their range that they may become an endangered species within the foreseeable future or that they may be endangered if their environment deteriorates. Threatened species and subspecies include those species and subspecies listed as 'threatened' by the federal government as well as any species or subspecies identified as threatened by Oklahoma statutes or Commission resolution" (Oklahoma Permanent Statutes §29-2-135) (USAF, 2003a).

Biological resources also include wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, unique flora and fauna niche provision, stormwater attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the "waters of the U.S." under Section 404 of the CWA. The term "waters of the U.S." has a broad meaning under the CWA and incorporates deep-water aquatic habitats and special aquatic habitats (including wetlands). The US Army Corps of Engineers (USACE) defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328) (USAF, 2003a).

Vegetation

Vance AFB is located in the Middle Rocky Mountain Steppe-Coniferous Forest-Alpine Meadow Province. The MFH area is located along the eastern edge of the Great Plains in the Red Bed Plains section of the Central Lowlands physiographic province. This province is also known as the Enid Prairies Subdivision, characterized by flat to gently rolling prairies that are typically only broken by drainageways (USAF, 2003a). Prior to development of the area, the

Great Plains region consisted of mixed grass prairies, where dominant species included big bluestem, little bluestem, Indiangrass, and switchgrass. Other grass species included winter wheatgrass and sideoats gramma (USAF, 2005).

The majority of land at Vance AFB is improved and/or semi-improved. The MFH area is entirely landscaped with urban types of vegetation, and the area consists of regularly maintained lawns and grounds. An urban forest study in 1993 inventoried approximately 4,000 trees including more than 75 different species. The most prominent tree species include Siberian elm, red cedar, lacebark elm, and callery pear (USAF, 2005). This information has been included in the Vance AFB Integrated Resources Management Plan (IRMP) and specific management activities have been prescribed. Vance AFB has been designated as a Tree City USA installation (USAF, 2003a).

A variety of plant species common to the area are present on Vance AFB. Vegetation communities include large areas of native short and tall grasses and forbs. Species of grasses and forbs found on Vance AFB include buffalo grass, sideoats gramma, and sand dropseed. Agricultural areas present within Vance AFB are planted with wheat, alfalfa, sorghum, and other small grains (USAF, 2003a).

Wildlife

According to the March 2005 EBS, an extensive biological inventory has not been conducted on the main Base. However, examples of the mammal species that could be present on Base include the following: raccoon, coyote, bobcat, badger, Virginia opossum, striped skunk, black-tailed jackrabbit, eastern cottontail, gray squirrel, fox squirrel, and white-tailed deer. A number of reptile and amphibian species have also been observed on Base. These include the fence lizard, common garter snake, ornate box turtle, black rat snake, American toad, and gray tree frog. A diverse population of game and non-game birds also resides at Vance AFB, including quail, wild turkey, dove, bobwhite, pheasant, and crow (USAF, 2005).

The open grassland areas on Vance AFB provide seeds for a diverse population of game and non-game birds. Species such as wild turkey, northern bobwhite, scaled quail, mourning dove, ring-necked pheasant, American crow, and numerous song birds that could be present on the Base. The border resulting from the boundary between grassland and forested ecosystems provides excellent habitat for a variety of avian species. Bird species that migrate and/or winter in these areas may be numerous, whereas summer breeding birds may include several species of

hummingbirds, flycatchers, and vireos. The most common breeding birds in these areas include meadowlark, sparrows, the brown-headed cowbird, and the tufted titmouse. In the marshy and stream areas on Base, birds such as cattle egrets and several species of heron may locally breed (USAF, 2003a).

Raptors (i.e., birds of prey) observed at Vance AFB include the red-tailed hawk, Cooper's Hawk, northern Goshawk, and turkey vulture. All of these raptors are known to breed and winter in Oklahoma (USAF, 2003a).

Wetlands

Four federal agencies are responsible for identifying and regulating wetlands: the USACE, the USEPA, the USFWS, and the Natural Resource Conservation Service (NRCS). The USACE and USEPA are primarily responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. The USACE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. The NRCS has developed procedures for identifying wetlands for compliance with the Flood Security Act of 1985, and the USFWS has developed a classification system for identifying wetlands. The protection of wetlands is also mandated under EO 11990.

No wetlands have been identified on Vance AFB or on the proposed MFH area (USAF, 2003a). As a result, an in depth analysis of wetlands is not needed.

Threatened and Endangered Species

The ESA of 1973, along with subsequent amendments, requires that actions of Federal agencies avoid jeopardizing the continued existence of federally listed or proposed threatened or endangered species or destroying or adversely modifying designated or proposed critical habitats.

In 1996, a survey was conducted for threatened or endangered species. There are no known federally or state listed plant, insect, reptile/amphibian, animal or bird species at Vance AFB (USAF, 2005). Thus, none are anticipated to be located at the MFH area. In addition, the Oklahoma Department of Wildlife Conservation (ODWC) has stated that no state-listed species would be affected in the area of Vance AFB (USAF, 2003a). As a result, analysis of threatened and endangered species on or in the vicinity of Vance AFB is not needed.

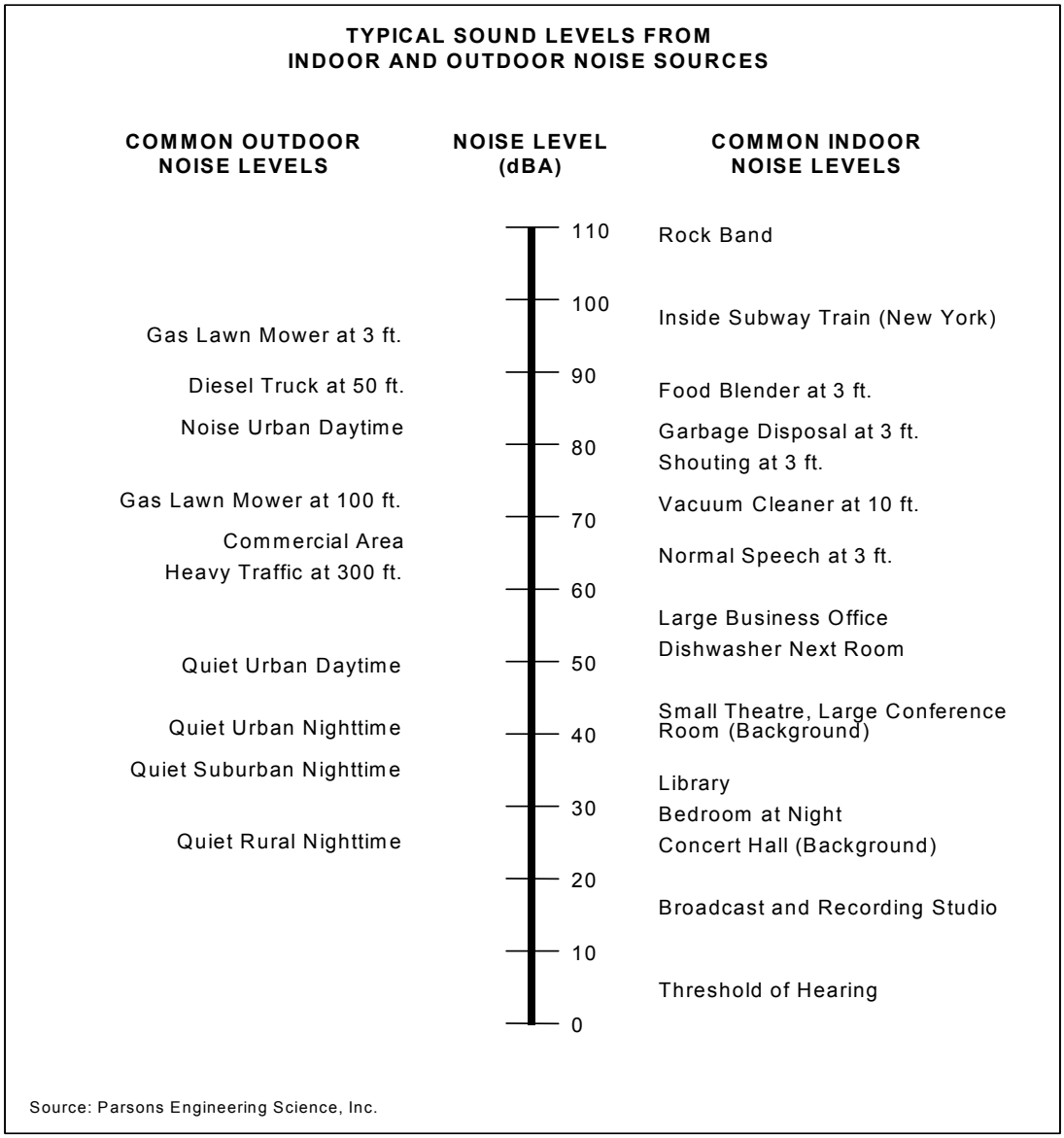
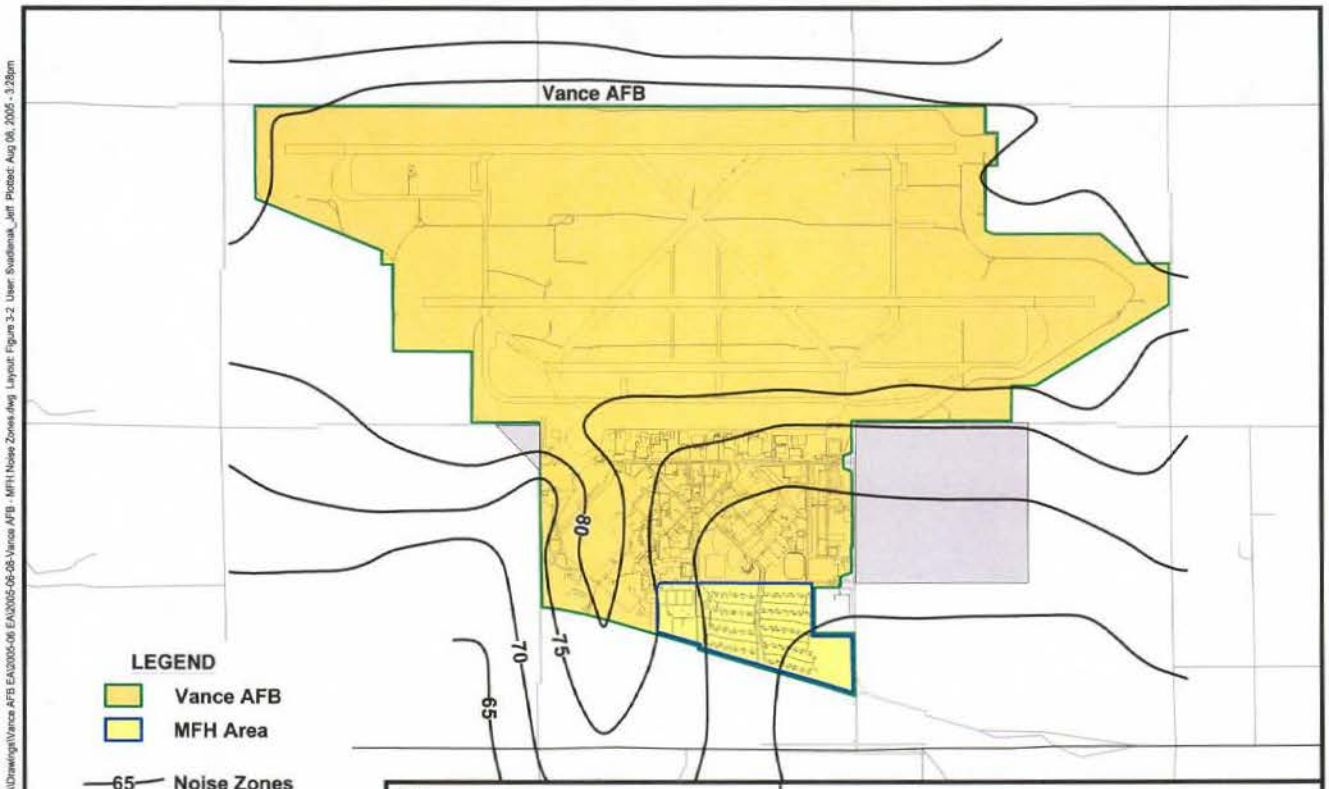


Figure 3-1. Typical A-Weighted dBA Sound Pressure (Noise) Levels



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Date:	8/08/05
File Name:	2005-06-08-Vance AFB - MFH Noise Zones.dwg
URS Project No.:	40818613

Vance AFB MFH Noise Zones

Environmental Assessment for Privatization of MFH at Vance AFB Vance AFB, Oklahoma

Figure No.: **3-2**

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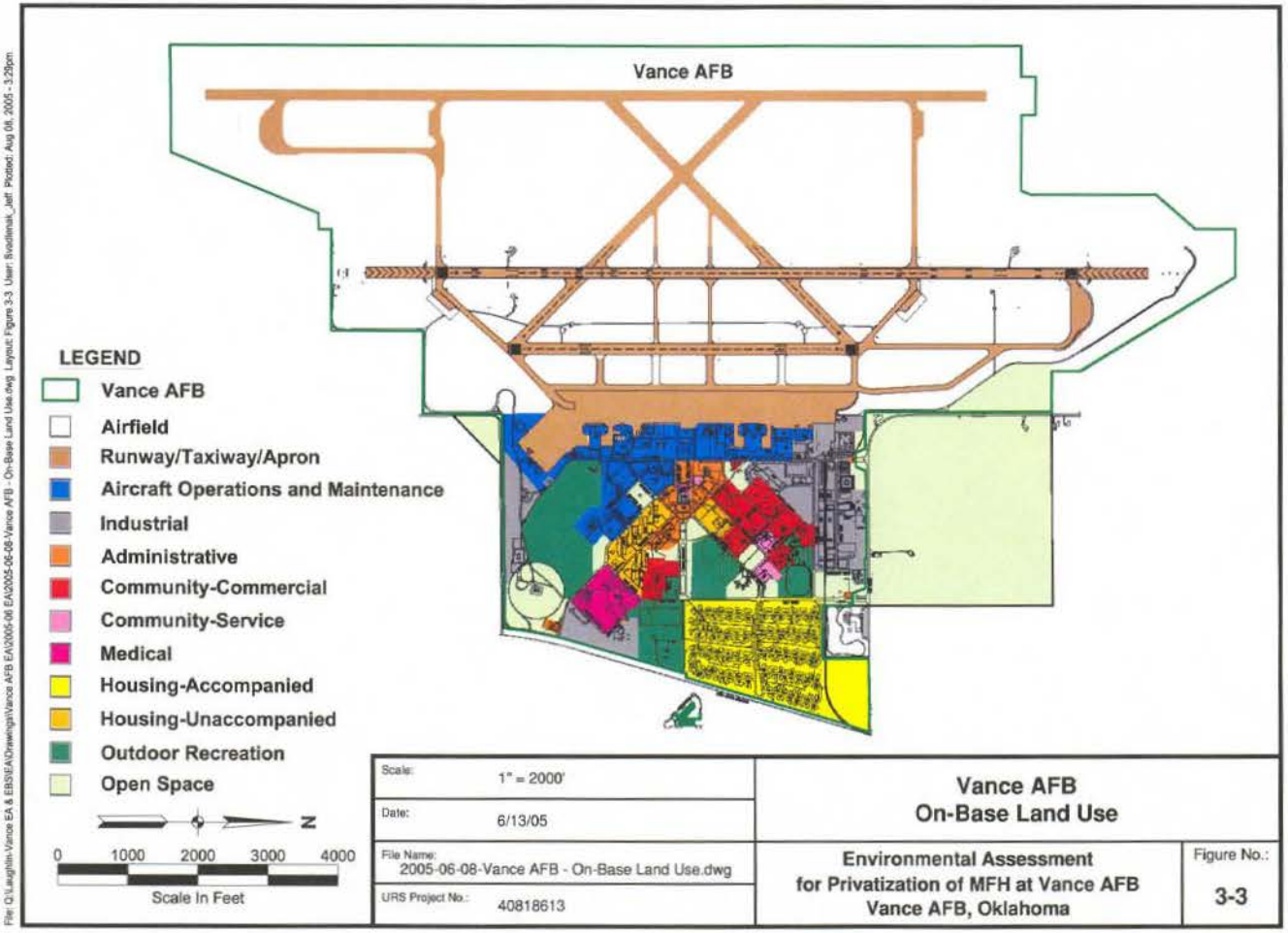

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental impacts that are likely to occur as a result of the Proposed Action and Maximum Development Alternative. The No-Action Alternative provides a baseline against which the impacts of the Proposed Action can be compared. A discussion of mitigation measures is included, as necessary. Given that no other actions are proposed that would coincide in time and space with the Proposed Action, no cumulative impacts are expected to contribute to the impacts of the Proposed Action.

4.1 Description of the Effects of No-Action, Proposed Action, and Maximum Development Alternative on the Affected Environment

4.1.1 Noise

This section describes the evaluation of the potential noise impacts associated with the proposed demolition and construction of new MFH units to potential noise receptors. These impacts could be beneficial or adverse. These impacts were evaluated based on (1) the degree to which noise levels generated by the construction and renovation activities were higher than the ambient noise levels; (2) the degree to which there is annoyance and/or interference with activity; and (3) the proximity of noise-sensitive receptors to the noise source. A noise-sensitive receptor is commonly defined as the occupants of any facility where a state of quietness is a basis for use, such as a residence, hospital, or church.

Noise naturally dissipates by atmospheric attenuation as it travels through the air. Some other factors that can affect the amount of attenuation are ground surface, foliage, topography, and humidity. In addition, the level of noise disturbance is greatly affected by the degree of existing background noise at the MFH area.

No Action Alternative

Under the No Action Alternative, one unit would be demolished to meet the HRMA of 229 units. No changes would be made to the existing units and short-term adverse noise impacts would be negligible. Consequently, the reduced noise levels that could be achieved from the installation of sound proofing in newly constructed homes would not be realized. No long-term impacts would result from this alternative.

Proposed Action

The primary source of noise at Vance AFB would continue to be from aircraft operations; however, there could be periods of time in which demolition and construction noise could be discerned and create a minor annoyance to on-Base personnel. This condition would occur when construction activity is underway and flying activity is low. The use of heavy construction equipment during day time hours, especially during demolition operations and while there is no flying activity, could potentially provide temporary annoyance noise to residents of MFH nearby. These noise disturbances would be of short duration and would be limited primarily to the MFH area. After completion of the proposed construction activities, there would be no changes to existing noise levels. Overall, noise impacts associated with the Proposed Action would be negligible. Therefore, the Proposed Action would not produce any long-term impacts to the existing noise environment

In accordance with the goal of the Air Force Noise Level Reduction (NLR) policy to reduce interior noise levels in residential and public use buildings to a DNL of approximately 45 dBA, all the new MFH units will be designed and constructed to comply with this policy. Therefore, interior noise levels over the long-term would be reduced in the new MFH units. Consequently, long-term positive noise impacts will be achieved.

Under the Proposed Action, the MFH units would be demolished and constructed across a larger land area than the one currently used for MFH, utilizing the area where there is an existing park. Smaller parks would be constructed throughout the newly developed housing area to replace the existing park. The existing park is mostly within the 70 DNL noise zone. The new parks will be located within the 65 DNL noise zone. Therefore, there will be a slight reduction in noise levels for MFH residents who access the parks for recreational use. However, the homes that are to be constructed in the current park will be located in a higher noise zone (70 DNL) than the current inadequate units (65-69 DNL). The installation of sound proofing equipment at these new residences will minimize the interior noise levels in these units such that interior noise levels over the long-term would be less than those present in the existing inadequate units.

Maximum Development Alternative

Under the Maximum Development Alternative, more units would be demolished and constructed (230 and 422, respectively) than under the Proposed Action. Construction noise would temporarily provide noise annoyance to residents of MFH nearby for a longer duration than that of

the Proposed Action. However, as with the Proposed Action, overall noise impacts associated with the Maximum Development Alternative would be negligible and would not produce long-term impacts to the existing environment. As with the Proposed Action, similar beneficial impacts would result from the installation of sound proofing equipment at the new units.

Mitigative Actions

Noise levels would temporarily increase from the demolition of 176 units and construction of 175 units at Vance AFB; however, mitigation measures would not be required for the Proposed Action.

Possible measures that would reduce noise impacts from this project include the following:

- Design and construct new MFH units to comply with Air Force NLR policy requirements;
- Notify/consult with MFH unit residents regarding the proposed MFH demolition and construction schedule, including the hours when construction would take place, to minimize to the extent possible construction-related noise disturbances to residents;
- Equip noise-generating heavy equipment at the project site with the manufacturer's standard noise control devices;
- Properly maintain all equipment to assure that no additional noise from worn or improperly maintained equipment parts is generated; and
- Require workers to wear hearing protection to reduce occupational exposure to the noise from heavy equipment.

4.1.2 Land Use

The following factors were considered in evaluating potential land use: (1) the degree to which the location of facilities would adversely affect existing sensitive land uses; (2) the degree to which demolition, construction, and/or operation of facilities would interfere with the activities or functions of adjacent existing or proposed land uses; and (3) the degree to which any physical changes in land use would affect surrounding uses and compatibility with land use plans.

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Only one unit would be demolished. No adverse impacts would be expected.

Proposed Action

The project, as proposed, is consistent with existing and proposed land uses at the Base. The area would continue to be used for MFH. However, the area that is currently a park will be converted from residential recreational use to residential use to make additional space for the new MFH units. Given that smaller playground areas would be constructed throughout the newly developed housing area, resident children would continue to have access to parks and recreation in the MFH area.

Therefore, no significant adverse impacts to land use would be expected within the existing MFH area as a result of the Proposed Action.

Maximum Development Alternative

The Maximum Development Alternative is also consistent with existing and proposed land uses at the Base. The density of housing would be greater than that of the Proposed Action. As with the Proposed Action, the area that is currently a park would be converted from residential recreational use to residential use to make additional space for the new MFH units. Under this alternative, there would be less space available to construct smaller playground areas for the resident children. However, 20% of the total acreage conveyed would be allocated to sidewalks, streets, and green space (including playgrounds).

Therefore, no significant adverse impacts to land use would be expected within the existing MFH area as a result of the Maximum Development Alternative.

Mitigative Actions

Impacts to land use would not be expected from the proposed activities. Vance AFB is proposing to design smaller playground areas throughout the housing area to compensate for the loss of the existing park. No other mitigative actions would be required.

4.1.3 Air Quality

The potential impacts to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing ambient air quality conditions. If the Proposed Action contributes to an increase of direct or indirect pollutants that would contribute to a violation of any national or state ambient air quality standard, or represent an increase of ten percent or more in an affected AQCR emissions inventory, the impact would be considered significant and adverse.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions to be "significant" if: 1) a proposed project is within 10 kilometers of any Class I area; and 2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of 1 $\mu g/m^3$ or more of any regulated pollutant in the Class I area (40 CFR Part 52.21(b)(23)(iii)). Vance AFB is not within ten kilometers of any Class I designated area. The closest Class I area is the Wichita Mountains Wildlife Refuge in Oklahoma, which is 322 kilometers (approximately 200 miles) from Vance AFB (USAF, 2003a).

The following factors were considered in evaluating air quality: (1) the short- and long-term air emissions generated from demolition and construction activities; (2) the type of emissions generated; and (3) the potential for emissions to exceed NAAQSs or State Implementation Plan limits.

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Only one unit would be demolished. No significant impacts would result from this alternative.

Proposed Action

The Proposed Action is to convey 230 units, demolish 176 inadequate units, and construct 175 new MFH units to meet the HRMA of 229 units. No changes would be made to the newly constructed 54 units. The total square footage to be demolished is 210,936 ft^2. The total square footage of the 175 new MFH units will be 320,425 ft^2. All of the utility lines in the housing area (water, sewer, and gas mains and laterals) would be replaced. In addition, with the exception of the main road in the middle of the housing area, most of the existing roads would be demolished and replaced with new roads based on a revised housing configuration.

The Proposed Action would result in short-term emissions during demolition and construction of the existing and new homes and associated infrastructure (roads and utility lines), principally from site clearing/preparation activities and the use of construction equipment and related vehicles. There would be no or a negligible increase in long-term emissions as it is assumed that personal operated vehicle (POV) use would remain the same and all boilers and generators associated with housing would be comparable to those already in use. As a conservative estimate, it was assumed that all emissions would occur in a single year, although actual development of homes will likely be phased over a period of 5 to 10 years.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked on and the level of construction activity. The USEPA has estimated that uncontrolled fugitive dust emissions from ground disturbing activities would be emitted at a rate of 80 lbs of total suspended particulate (TSP) per acre per day of disturbance (USEPA 1995). In a USEPA study of air sampling data at a distance of 50 meters downwind from construction activities, PM_{10} emissions from various open dust sources were determined based on the ratio of PM_{10} to TSP sampling data. The average PM_{10} to TSP ratios for top soil removal, aggregate hauling, and cut and fill operations are reported as 0.27, 0.23, and 0.22, respectively (USEPA 1988). Using 0.24 as the average ratio for purposes of this analysis, the emission factor for PM_{10} dust emissions becomes 19.2 lbs per acre per day of disturbance. The emissions presented in Table 4-1 include the estimated annual PM_{10} emissions associated with the uncontrolled fugitive dust emissions from the demolition and construction sites. Emissions from infrastructure improvements are also included. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. The USEPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective watering program. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day would reduce TSP emissions as much as 50 percent (USEPA 1995). The effects from fugitive dust would last only as long as the duration of construction activity, decrease rapidly with distance from the construction site, and would not result in long-term impacts.

Table 4-1. Projected Air Emissions From the Proposed Action

Criteria Air Pollutant	CO	VOC	NO_x	SO_X	$PM_{10/2.5}$
Proposed Action (tpy)	18.78	13.54	41.62	4.44	25.92
Percent of Regional Emissions	0.27	0.19	0.21	0.01	0.57
2002 AQCR 185 Emissions (tpy)[a]	7014.20	7123.17	20011.67	32461.49	4508.55

[a] As reported in the 2002 ODEQ Source Emissions Database (Moffitt, 2004)
tpy = tons per year.

Specific information describing the types of construction equipment required for a task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of analysis, these parameters were estimated using established cost estimating methodologies for construction and experience with similar types of construction projects (Means 1996). Combustive emissions from construction equipment exhausts were estimated by using USEPA approved emissions factors for heavy-duty diesel-powered construction equipment (USEPA 2000) along with the emission factors for the estimated types and numbers of equipment expected to be used during construction (Latimer 2000). These emissions are included in Table 4-1. As with fugitive dust emissions, construction emissions would produce slightly elevated air pollutant concentrations. However, the effects from construction activities would last only as long as the duration of construction activity, decrease rapidly with distance from the construction site, and would not result in long-term impacts.

Review of emissions from the Proposed Action in Table 4-1 indicates that the greatest percentage impact to the regional emissions (AQCR 185) in a given year during the project would be from $PM_{10/2.5}$ (25.92 tpy increase) at 0.57% (note: it was assumed that all emissions would occur in a single year although actual development of homes will be divided over several years). The emissions would be temporary and would be eliminated after the activity is completed. All emissions would fall well below the 10 percent threshold that is considered regionally significant by the USEPA if the region were nonattainment for any of the criteria pollutants as stated in 40 CFR 51, Subpart W, Section 852.

The short-term emissions from the Proposed Action are not in danger of exceeding NAAQS or limits that would be established in a specific SIP. The emission of minor amounts of air pollution would be unavoidable; however, the individual and cumulative impacts during construction and demolition will be small when compared to the 2002 AQCR 185 emissions.

Maximum Development Alternative

The Maximum Development Alternative consists of the demolition of 230 existing MFH units and the construction of 422 new MFH units. Therefore, all 54 newly constructed units would be demolished along with the inadequate units. The total square footage to be demolished is 275,655 ft^2 (see Table 4-4). The total square footage of the 422 new MFH units would be 772,682 ft^2 (see Table 4-4). As with the Proposed Action, all of the utility lines in the housing area (water, sewer, and gas mains and laterals) would be replaced. In addition, all of the existing roads would be demolished and replaced with new roads based on a revised housing configuration.

As with the Proposed Action, the Maximum Development Alternative would result in short-term emissions during demolition and construction of the existing and new homes and associated infrastructure (roads and utility lines) and there would be no or a negligible increase in long-term emissions.

The emissions presented in Table 4-2 include the estimated annual PM_{10} emissions associated with the uncontrolled fugitive dust emissions from the demolition and construction under the Maximum Development Alternative. Emissions from infrastructure improvements are also included. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations.

Table 4-2. Projected Air Emissions From the Maximum Development Alternative

Criteria Air Pollutant	CO	VOC	NO_x	SO_X	$PM_{10/2.5}$
Maximum Development Alternative (tpy)	40.38	31.41	89.64	9.57	53.76
Percent of Regional Emissions	0.57	0.44	0.45	0.03	1.2
2002 AQCR 185 Emissions (tpy)[a]	7014.20	7123.17	20011.67	32461.49	4508.55

[a] As reported in the 2002 ODEQ Source Emissions Database (Moffitt, 2004)
tpy = tons per year

Combustive emissions from construction equipment exhausts for this alternative are also included in Table 4-2. As with fugitive dust emissions, construction emissions would produce slightly elevated air pollutant concentrations. However, as with the Proposed Action, the effects from construction activities would last only as long as the duration of construction activity, decrease rapidly with distance from the construction site, and would not result in long-term impacts.

Review of emissions from the Maximum Development Alternative in Table 4-2 indicates that the greatest percentage impact to the regional emissions (AQCR 185) in a given year during the project would be from $PM_{10/2.5}$ (53.76 tpy increase) at 1.2% (note: it was assumed that all emissions would occur in a single year although actual development of homes will be divided over several years). The emissions would be temporary and would be eliminated after the activity is completed. All emissions would fall well below the 10 percent threshold that is considered regionally significant by the USEPA if the region were non-attainment for any of the criteria pollutants as stated in 40 CFR 51, Subpart W, Section 852.

The short-term emissions from the Maximum Development Alternative are not in danger of exceeding NAAQS or limits that would be established in a specific SIP. The emission of minor amounts of air pollution would be unavoidable; however, the individual and cumulative impacts during construction and demolition will be small when compared to the 2002 AQCR 185 emissions.

Mitigative Actions

Minor impacts to regional air quality would be expected from the proposed activities. Construction contractors would apply water at the construction site to control fugitive emissions. No other mitigative actions would be required.

4.1.4 Socioeconomic Resources

Beneficial social and economic effects of the Proposed Action would be considered significant if they resulted in a measurable increase in annualized rates of employment, personal income, or business activity within the local economy of the proposed project. Adverse effects typically result from boom/bust economic cycles and temporary increased demand for goods and services beyond existing capacity. Because a privatization developer has not yet been selected, the amount of expenditures for the Proposed Action has not been finalized. Consequently, the analysis of the impacts of the Proposed Action on socioeconomic resources is qualitative.

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Vance AFB would retain 229 units and demolish one unit to meet the HRMA of 229 units. Because of limited military funding, there would be no whole house renovations or periodic capital repair and improvements. As such, MFH housing at Vance AFB would continue to deteriorate. The short-term beneficial impacts from construction

activities on regional socioeconomics that would be realized under the Proposed Action would not occur.

Proposed Action

To ensure that a sufficient number of housing units are available for military personnel and their families, the Air Force will require the privatization developer to ensure that the HRMA requirement of 229 MFH units is available at all times. Consequently, demolition and construction is likely to be conducted in a phased approach. The amount of funds introduced into the local community as a result of demolition and construction activity would therefore be distributed across several years and is not likely to increase the demand for goods and services beyond existing regional capacity.

Management of the MFH units would be transferred to a private developer under the Proposed Action. However, it is likely that the MFH developer would require similar staffing levels to maintain the MFH units, resulting in no net loss of jobs.

As stated previously, replacement of the 175 inadequate MFH units is likely to be phased such that 229 MFH units are available at all times. Therefore, it is unlikely that any families would be relocated to off-Base housing and the Proposed Action would have no impact on the availability of housing in the local community.

The Proposed Action will not increase the number of housing units beyond the level currently available. Consequently, there would be no long-term increase in the local population and no long-term increase in the number of children attending local schools. However, there could potentially be a temporary increase in local population and children related to the families of the construction crews.

Short-term beneficial impacts on regional socioeconomics would occur during demolition and construction activities at Vance AFB due to the purchase of materials and the use of labor from the regional work force. However, demolition and construction-related expenditures are not expected to cause measurable changes in the key economic indicators of the regional economy. Therefore, socioeconomic impacts would be negligible under the Proposed Action.

Maximum Development Alternative

As with the Proposed Action, the construction and demolition will be phased to ensure that the HRMA requirement of 229 units is available at all times. The amount of funds introduced into the local community as a result of demolition and construction activity would therefore be distributed across several years and is not likely to increase the demand for goods and services beyond existing regional capacity.

Under the Maximum Development Activity, it is possible that the MFH developer would require a similar increase in staffing levels to maintain the MFH units, resulting in a potential gain of jobs. As with the Proposed Action, it is unlikely that any families would be relocated to off-Base housing and therefore, this Alternative would have no impact on the availability of housing in the local community.

The Maximum Development Alternative will increase the number of housing units beyond the level currently available. Consequently, there would be a long-term increase in the local population and in the number of children attending local schools and a potential temporary increase in local population and children related to the families of the construction crews.

As with the Proposed Action, short-term beneficial impacts on regional socioeconomics would occur during demolition and construction activities. However, demolition and construction-related expenditures are not expected to cause measurable changes in the key economic indicators of the regional economy. Therefore, socioeconomic impacts would be negligible under the Maximum Development Alternative.

Mitigative Actions

Since the Proposed Action is not expected to have an adverse impact on socioeconomic resources, housing, or education, no mitigative actions are needed.

4.1.5 Environmental Justice

The U.S. EPA defined minority and/or low income populations in the April 1998 Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses as:

- The minority and/or low-income population of the affected area is greater than 50 percent of the affected area's general population; or

- The minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

As indicated in Section 3.1.5, the potentially affected community considered under the environmental justice analysis for this EA is the City of Enid. The larger regional area that will be used as the community of comparison is Garfield County.

No Action Alternative

The MFH area is not located in an environmental justice area of concern. Therefore, the No Action Alternative would have no disproportionately high and adverse effects on minority or low-income populations.

Proposed Action

Based on U.S. Census data presented in Section 3.1.5, less than 50 percent of the populations of both the City of Enid and Garfield County are minorities. In addition, the minority population percentage in the City of Enid (12.8 percent) is less than the minority population for the U.S. (24.9 percent) and the State of Oklahoma (23.8 percent), and is only slightly higher (less than 2 percentage points) than the minority population in Garfield County (11.3 percent). Therefore, the affected area is not considered a minority population area.

Income data from the U.S. Census indicates that the proposed project is not located in a low-income area. The percentage of the City of Enid population meeting low-income criteria is 14.8 percent, which is significantly less than the 50 percent threshold defined by the EPA. In addition, this percentage is less than 2 percentage points greater than either the general population (12.4 percent for the U.S.) and comparable units of geographic analysis (13.9 percent for Garfield County and 14.7 percent for the State of Oklahoma).

Based on the U.S. Census data, the proposed project is not located in an environmental justice area of concern. Therefore, there is no potential for the proposed project to have disproportionately high and adverse effects on minority or low-income populations.

Maximum Development Alternative

As with the Proposed Action, the proposed project is not located in an environmental justice area of concern. Therefore, there is no potential for the proposed project to have disproportionately high and adverse effects on minority or low-income populations.

Mitigative Actions

Disproportionately high and adverse impacts to minority and low-income populations would not be expected from the proposed activities. Therefore, no mitigative actions would be required.

4.1.6 Cultural Resources

Potential impacts were assessed by (1) identifying types and possible locations of construction activities that could directly or indirectly affect cultural resources and (2) identifying whether cultural resources may be affected. Impacts to cultural and/or historic resources may occur if project activities resulted in: destruction or alteration of all or a contributing part of any NRHP eligible cultural or historic site without prior consultation with the SHPO; isolation of an eligible cultural resource from its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with a NRHP eligible site or would alter its setting; neglect and subsequent deterioration of a NRHP eligible site; and disturbance of important sites of religious or cultural significance to Native Americans. Historic properties, under 36 CFR 800, are defined as cultural resources included in, or eligible for inclusion in the NRHP. The term "eligible for inclusion" includes both listed and eligible properties, which meet NRHP evaluation criteria as outlined by 36 CFR 60.4. Therefore, cultural resources not yet evaluated are considered potentially eligible for the NRHP and are afforded the same regulatory consideration as nominated historic properties.

Historic Resources

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Only one unit would be demolished under the No Action Alternative. None of the MFH units are currently eligible to the NRHP. Therefore, the demolition of one unit would have no adverse effect on any known historic or archeological resources.

Proposed Action

Structures that would be demolished in association with the Proposed Action include the existing MFH units and associated infrastructure. The existing MFH units are not eligible for nomination to the NRHP (USAF, 2003a). Therefore, the demolition of these buildings associated with the Proposed Action would have no effect on historic properties. Based on these findings, the Proposed Action represents no effect to cultural resources at Vance AFB.

Maximum Development Alternative

Structures that would be demolished in association with the Maximum Development Alternative include the existing MFH units and associated infrastructure. The existing MFH units are not eligible for nomination to the NRHP (USAF, 2003a). Therefore, the demolition of these buildings associated with the Maximum Development Alternative would have no effect on historic properties.

Mitigative Actions

Impacts to historic resources would not be expected from the proposed activities. Therefore, no mitigative actions would be required.

Archaeological Resources

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Only one unit would be demolished. Since there are no archeological resources located on Vance AFB or within the MFH area, the No Action Alternative would have no adverse effect on any known historic or archeological resources. If cultural materials are discovered the Oklahoma SHPO would be consulted.

Proposed Action

There are no known archaeological resources located on Vance AFB or within the MFH area, and the area is not considered to have a high potential for cultural resources. In addition, the areas within the Base that would be subject to ground disturbing activities associated with the Proposed Action have been subjected to heavy disturbance in the past, and are currently the location of the existing MFH units and associated park area.

In accordance with the NHPA, if during the course of program activities, cultural/historic materials (particularly human remains) are unexpectedly discovered, work in the immediate vicinity of the cultural materials would be suspended and the Oklahoma SHPO consulted through the Vance AFB Environmental Branch. Subsequent actions would follow guidance provided in 36 CFR 800 and NAGPRA.

Maximum Development Alternative

There are no known archaeological resources located on Vance AFB or within the MFH area, and the area is not considered to have a high potential for cultural resources. In addition, the areas within the Base that would be subject to ground disturbing activities associated with the Maximum Development Alternative have been subjected to heavy disturbance in the past, and are currently the location of the existing MFH units and associated park area.

Mitigative Actions

Impacts to archaeological resources would not be expected from the proposed activities. However, if any archeological artifacts were to be exposed during construction, the construction activities would cease, as required by Federal and Air Force regulations. Work would not resume until an archeological investigation is completed. No other mitigative actions would be required.

4.1.7 Hazardous Materials and Wastes

The degree to which proposed demolition and construction activities could affect the existing environmental and management practices was considered in evaluating potential impacts of hazardous materials and wastes, including ERP sites. Impacts could result if non-hazardous/regulated and hazardous substances were collected, stored and/or disposed of improperly.

Hazardous Materials

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3, other than the demolition of one MFH unit. This demolition would not cause an increase in the use of hazardous materials, therefore, hazardous materials management at Vance AFB would not be impacted by the No-Action Alternative. However, personnel would continue to occupy the existing 175 inadequate MFH units that contain ACM

and LBP materials. Those MFH units would continue to deteriorate, and would necessitate long-term maintenance and mitigation of ACM and LBP materials. The ACM and LBP materials are not friable, and personnel are not currently exposed to the materials; thus, any potential impact from material remaining in the inadequate units would be negligible in the short-term.

Proposed Action

The use of hazardous materials during implementation of the Proposed Action is expected to be limited to fuels, oils and lubricants associated with construction equipment. If fuels are stored on site to refuel the equipment, proper containment and management procedures would be followed in compliance with standard best management practices. These hazardous materials would be managed by the contractor. Additionally, there would be no increase in the use of hazardous materials as a result of this project. Therefore, Vance AFB hazardous materials management would not be impacted by the proposed demolition and construction activities.

Asbestos. To the extent that all ACM is contained and removed if encountered during demolition activities in accordance with ACM removal procedures, no negative impacts to the management of ACM would be associated with the Proposed Action. In addition, no ACM would be used in the construction of the new housing units. Positive impacts would result from removing ACM from the existing MFH units.

Lead-Based Paint. There are several locations in the housing area that have been found to have LBP (beams or columns, exterior trim, exterior window frames, exterior fences, paneling, walls/sheetrock, shelf supports, door frames, and ceilings). The procedures outlined in the LBP Management Plan would be followed to properly manage these areas of the housing units during demolition activities. No LBP would be used in the construction of the new housing units. Positive impacts would result from removing LBP from MFH units.

Radon. Based on EPAs established radon zones and a 1990 basewide radon survey, there is a very low potential for accumulation of radon gas within the present or future housing units above the guidance level of 4.0 pCi/L.

Pesticides. The soil under and immediately surrounding the housing units may contain chlordane (a termiticide). The construction contractor would take care during demolition and construction to disturb as little of this soil as possible. Of particular concern would be earthmoving activities such as grading or leveling. The contractor would not remove any soils

from the site without appropriate environmental testing and without written consent from the Vance AFB Wing Commander. Prior to occupancy of housing where soils were disturbed, the contractor would be responsible for ensuring that representative samples of soil immediately surrounding the housing, gardens, and likely children's play areas is conducted. If the sample results exceed 1.6 milligrams/kilogram, the contractor would be responsible for ensuring that a complete risk assessment is conducted. The results of screening sampling or a risk assessment would be provided to the Air Force for approval prior to occupancy (USAF, 2003a).

Maximum Development Alternative

As with the Proposed Action, the use of hazardous materials is expected to be limited to fuels, oils and lubricants associated with construction equipment. The contractor would manage these hazardous materials. Additionally, there would be no increase in the use of hazardous materials as a result of this alternative. Therefore, Vance AFB hazardous materials management would not be impacted by the proposed demolition and construction activities under the Maximum Development Alternative.

Asbestos. No negative impacts to the management of ACM would be associated with this alternative. In addition, no ACM would be used in the construction of the new housing units. Positive impacts would result from removing ACM from the MFH units.

Lead-Based Paint. To the extent that the procedures outlined in the LBP Management Plan are followed during demolition activities, there would be no impacts associated with LBP. No LBP would be used in the construction of the new housing units. Positive impacts would result from removing LBP from the existing MFH units.

Radon. As with the Proposed Action**,** Radon is not expected to be an issue under the Maximum Development Alternative.

Pesticides. To the extent that the contractor minimizes disturbance of the soil under and immediately surrounding the housing units that may contain chlordane (a termiticide) and implements the mitigation measures outlined below, the impacts are expected to be low. As with the Proposed Action, the contractor would not remove any soils from the site without appropriate environmental testing and without written consent from the Vance AFB Wing Commander. Prior to occupancy of housing where soils were disturbed, the contractor would be responsible for ensuring that representative samples of soil immediately surrounding the housing, gardens,

and likely children's play areas is conducted. If the sample results exceed 1.6 milligrams/kilogram, the contractor would be responsible for ensuring that a complete risk assessment is conducted. The results of screening sampling or a risk assessment would be provided to the Air Force for approval prior to occupancy (USAF, 2003a).

Mitigative Actions

Impacts with regard to hazardous materials would not be expected from the proposed activities. However, if any contaminated soil were to be encountered during demolition, implementation of best management practices would remediate any contaminated soil encountered during the demolition phase of the proposed project. Therefore, no impacts to hazardous wastes and materials are anticipated and no mitigative actions would be required.

Hazardous Waste

No Action Alternative

Under the No Action Alternative, there would be no significant change in the baseline conditions described in Chapter 3. Hazardous waste associated with the demolition of one MFH unit would be negligible. However, personnel would continue to occupy the existing 175 inadequate MFH units that contain ACM and LBP materials. The ACM and LBP materials are not friable, and personnel are not currently exposed to the materials; thus, any potential impact from material remaining in the inadequate units would be negligible.

Proposed Action

It is anticipated that the quantity of hazardous wastes generated from the proposed construction and operation of the new Base facilities would be negligible, and these activities would not have any effect on the Base hazardous waste management program. The construction contractor would be responsible for handling any hazardous waste generated as a result of the proposed construction in accordance with applicable ODEQ regulations and the Vance AFB Hazardous Waste Management Plan (USAF, 2003a).

Hazardous wastes expected to be generated as a result of the construction of the MFH units at Vance AFB would be negligible, and would not have any effect on the hazardous waste management program. The ACM and LBP containing materials generated during demolition activities would be managed in accordance with established Base management plans. As mentioned above under hazardous materials, a limited number of soil samples would be collected

and analyzed to assess the presence or absence of pesticides so that any excess soil may be disposed of per applicable State and federal regulations. The construction contractor would be responsible for handling any hazardous waste generated as a result of the proposed construction in accordance with applicable ODEQ regulations and the Vance AFB Hazardous Waste Management Plan.

Maximum Development Alternative

As with the Proposed Action, it is anticipated that the quantity of hazardous wastes generated from the construction and demolition under the Maximum Development Alternative would be negligible, and that these activities would not have any effect on the Base hazardous waste management program. The construction contractor would be responsible for handling any hazardous waste generated as a result of the proposed construction in accordance with applicable ODEQ regulations and the Vance AFB Hazardous Waste Management Plan (USAF, 2003a).

Hazardous wastes expected to be generated as a result of the construction of the MFH units would be negligible, and would not have any effect on the hazardous waste management program. The ACM and LBP containing materials generated during demolition activities would be managed in accordance with established Base management plans. As mentioned above under hazardous materials, a limited number of soil samples would be collected and analyzed to assess the presence or absence of pesticides so that any excess soil may be disposed of per applicable State and federal regulations. The construction contractor would be responsible for handling any hazardous waste generated as a result of the proposed construction in accordance with applicable ODEQ regulations and the Vance AFB Hazardous Waste Management Plan.

Mitigative Actions

Impacts with regard to hazardous wastes would not be expected from the proposed activities. However, if any contaminated soil were to be encountered during demolition, implementation of best management practices would remediate any contaminated soil encountered during the demolition phase of the proposed project. Therefore, no impacts to hazardous wastes and materials are anticipated and no mitigative actions would be required.

Environmental Restoration Program

No Action Alternative

Under the No Action Alternative, there are no ERP sites within the MFH area. No impacts are expected.

Proposed Action

There are 25 ERP sites that have been identified on Vance AFB since the implementation of the ERP. There are no ERP or compliance sites located within the MFH area. None of the other ERP or compliance sites would affect or be affected by the Proposed Action. The ERP at Vance AFB is conducted in accordance with applicable Air Force and other Federal and state regulations.

Maximum Development Alternative

There are no ERP or compliance sites located within the MFH area. No impact to ERP sites are expected form this alternative.

Mitigative Actions

Impacts with regard to the ERP or other compliance sites would not be expected from the proposed activities. Therefore, no mitigative actions would be required.

4.1.8 Infrastructure and Utilities

The following factors were considered in evaluating potential impacts to infrastructure and utilities: (1) the degree of disruption or improvement of the existing level of service, (2) the change in energy requirements, water consumption, and wastewater systems; (3) the degree to which a utility service would have to alter operating practices and personnel requirements, (4) the degree to which a transportation system would have to alter operating practices and personnel requirements to support the action, (5) the degree to which increased demands from the proposed program would reduce the reliability of transportation systems, and (6) the degree to which the Proposed Action or alternatives change surface water runoff and erosion characteristics.

To the extent possible, existing infrastructure will be utilized. However, all of the utility lines and associated appurtenances for water, sewer, gas mains, and laterals will be replaced. This infrastructure shall be designed based on standard engineering practice for the materials

used; the ODEQ Standards for the Construction of Sanitary Sewer and Water Lines; and applicable Air Force Manuals and Pamphlets.

Sanitary Sewer

No Action Alternative

Under the No Action Alternative, there would be no changes in existing sewer lines and therefore, there would be no impact on the installation's sanitary sewer infrastructure as a result of the No Action Alternative.

Proposed Action

Existing sewer lines in the inadequate housing area are verified clay pipe with a plastic lining that was installed to reduce inflow and infiltration. The Proposed Action requires replacement of existing sewer lines. Replacement of these lines will involve excavation of trenches. Excavation material would be used to backfill the trenches after installation of the new lines.

The existing sewer lines serving the MFH area flow to an existing lift station located at the north end of the subdivision. The lift station has sufficient capacity to serve the housing area and the pumps were recently replaced with submersible grinder pumps. The existing lift station and 6-inch force main would remain. Existing manholes in the area of the new housing units are approximately six to seven feet deep (USAF, 2003a).

Given that the number of units will decrease by 1, a negligible reduction in wastewater generation on Vance AFB would be expected from the Proposed Action. Overall domestic wastewater generation in the community would not change because the number of personnel (and dependents) would remain the same.

Maximum Development Alternative

Existing sewer lines in the inadequate housing area are verified clay pipe with a plastic lining that was installed to reduce inflow and infiltration. Under the Maximum Development Alternative, all existing sewer lines would be replaced. Replacement of these lines will involve excavation of trenches. Excavation material would be used to backfill the trenches after installation of the new lines.

It is likely that the existing lift station and 6-inch force main would remain under this alternative.

Given that the number of units will increase, there would be an increase in wastewater generation on Vance AFB MFH area. Overall domestic wastewater generation in the community would increase slightly due to an increase in the number of personnel (and dependents) at the Base.

Mitigative Actions

Mitigation measures to protect health and welfare would not be required for the Proposed Action. There would be no impacts to wastewater treatment and capabilities.

Potable Water

No Action Alternative

Under the No Action Alternative, there would be a slight decrease in water consumption due to the demolition of 1 unit.

Proposed Action

Existing water lines are transit pipe and would be replaced by American Water Works Association (AWWA) C900 DR 18 PVC pipe with PVC fittings. These pipes are identical to the ones recently replaced for the new 54 MFH units recently constructed. Color-coded tracer tape with wire would be installed approximately 1 foot above all water lines. New water lines would be located approximately 3 feet from the back of the curbs and would be looped to provide good circulation of the water within the housing development. Service lines of ¾-inch copper or polyethylene using service saddles at the water main line would serve each residence. No meter would be required.

All water lines would be a minimum of six inches for fire protection purposes and fire hydrants would be spaced approximately 500-feet on center to place hydrants within 250-feet of any structure.

The existing 230 MFH units use an estimated 15,567 thousand gallons (kgal) of potable water per year (Hoffman, 2005). Since the number of housing units will decrease by 1, the Proposed Action would have a negligible impact on water consumption. Overall domestic

potable water consumption in the community would not change because the number of personnel (and dependents) assigned to Vance AFB would remain the same.

Maximum Development Alternative

As with the Proposed Action, all existing water lines would be replaced by American Water Works Association (AWWA) C900 DR 18 PVC pipe with PVC fittings.

The existing 230 MFH units use an estimated 15,567 (thousand gallons (kgal) of potable water per year (Hoffman, 2005). Since the number of housing units will increase to 422, the Maximum Development Alternative would cause an increase on water consumption to an estimated 28,562 kgal/year (assuming a per unit consumption rate of 67.7 kgal/year). Overall domestic potable water consumption in the community would increase slightly as a result of the increase in number of personnel (and dependents) assigned to Vance AFB.

Mitigative Actions

No adverse impacts to potable water would be anticipated for the Proposed Action. Therefore, no mitigative actions would be required.

Solid Waste

Solid waste impacts are evaluated based on the extent to which the Proposed Action would affect the existing solid waste management program and capacity of the area landfills. The Proposed Action would result in additional solid waste generated during demolition and construction of the new MFH units and infrastructure and would consist of building materials such as solid pieces of concrete, metals, and lumber.

No Action Alternative

Under the No Action Alternative, there would be a slight increase in solid waste generated from the demolition of one MFH unit of approximately 66 tons. No significant impacts from solid waste generation and disposal would be expected.

Proposed Action

The Proposed Action includes demolition of 176 units and construction of 175 units. These activities would generate construction debris, the generation of which would be spread out over five years. Table 4-3 presents a summary of the solid waste expected to be generated as a result of the Proposed Action over the construction phase of the project.

Table 4-3. Projected Solid Waste Generation from Demolition and Construction Activities for Proposed Action

Activity	Number of MFH Units Affected	Total Area Affected [1] (sf)	Estimated Volume of Debris Generated [2] (lbs/sf)	Estimated Solid Waste Generated from Action (tons)[3]
Demolition	176	210,936	111	11,707
New Construction	175	320,425	4.38	702
Total Asphalt		1364	1	1
			Total Solid Waste (Tons)	12,410

[1] Total Area Affected = Average Square Footage of Unit (1,198.5 ft^2 per existing unit and 1,831 ft^2 per new unit) x Number of Units Affected.
[2] USEPA 1998.
[3] Data rounded to the nearest ton.
sf = square feet
lbs/sf = pounds per square foot

The following assumptions were used in calculating solid waste generation:

- Approximately 4.38 pounds of construction debris is generated for each square foot (ft^2) of floor area for new structures.
- Approximately 1 pound of construction debris is generated for each ft^2 of new asphalt paving.
- Approximately 111 pounds of demolition debris is generated for each ft^2 of floor areas of demolished structures. Demolition debris includes concrete slabs from all affected units.

Based on the estimated volumes indicated in Table 4-3, a maximum volume of approximately 12,410 tons of demolition and construction debris would be generated over a 5-year period. This amounts to approximately 2,482 tpy, increasing the total expected solid waste disposal from Vance AFB for the first five years of the project to 5,346 tons per year, almost double the current waste generation quantity at Vance AFB (2,864 tons per year).

All construction debris would be disposed of at the City of Enid Municipal Landfill, which has capacity for 1.6 million tons and an expected closure date of 2017. The landfill has the capacity to handle all of the waste generated from the proposed demolition and construction. In addition, the landfill is in the process of constructing a new 4-acre landfill cell, which will begin receiving waste in 2006 (Pritchett, 2005). Assuming all of the debris would be disposed of at the landfill, the Proposed Action would result in a temporary increase in the total annual amount of waste disposed by Vance AFB. In 2004, the City of Enid Landfill reported receiving 90,275 tons of waste (ODEQ, 2004). The additional amount of waste requiring disposal annually under the Proposed Action (2,482 tons) represents a 2.7% increase in the annual

quantity of waste disposed of at the local landfill. The increase would therefore have a negligible effect on the remaining capacity and the life expectancy of the City of Enid municipal landfill. Impacts could further be reduced if some of the waste is recycled or reused.

There would be a negligible reduction in solid waste production on Vance AFB from residents, as the number of housing units will decrease by 1 unit. Similar to domestic wastewater generation and potable water consumption, overall solid waste generation in the community would not change because the number of personnel (and dependents) assigned to Vance AFB would remain the same.

Maximum Development Alternative

The Maximum Development Alternative includes demolition of 230 units and construction of 422 new units. These activities would generate construction debris, the generation of which would be spread out over five years. Table 4-4 presents a summary of the solid waste expected to be generated as a result of the Maximum Development Alternative over the construction phase of the project. The assumptions used in calculating solid waste generation for the Proposed Action were also followed for the Maximum Development Alternative.

Based on the estimated volumes indicated in Table 4-4, a maximum volume of approximately 16,992 tons of demolition and construction debris would be generated over a 5-year period. This amounts to approximately 3,398 tpy, increasing the total expected solid waste disposal from Vance AFB for the first five years of the project to 6,262 tpy, slightly more than double the current waste generation quantity at Vance AFB (2,864 tons per year).

Table 4-4. Projected Solid Waste Generation from Demolition and Construction Activities for Maximum Development Alternative

Activity	Number of MFH Units Affected	Total Area Affected [1] (sf)	Estimated Volume of Debris Generated [2] (lbs/sf)	Estimated Solid Waste Generated from Action (tons)
Demolition	230	275,655	111	15,299
New Construction	422	772,682	4.38	1,692
Total Asphalt		1,364	1	1
			Total Solid Waste (Tons)	16,992

[1] Total Area Affected = Average Square Footage of Unit (1,198.5 ft^2 per existing unit and 1,831 ft^2 per new unit) x Number of Units Affected.
[2] USEPA 1998.
[3] Data rounded to the nearest ton.
sf = square feet
lbs/sf = pounds per square foot

As with the Proposed Action, all construction debris would be disposed of at the City of Enid Municipal Landfill. The landfill has the capacity to handle all of the waste generated from the proposed demolition and construction. Assuming all of the debris would be disposed of at the landfill, this alternative would result in a temporary increase in the total annual amount of waste disposed by Vance AFB. Based on the 2004 landfill receipt data (90,275 tons), the additional amount of waste requiring disposal annually under the Maximum Development Alternative (3,398 tons) represents a 4% increase in the annual quantity of waste disposed of at the City of Enid Landfill. This is a slight increase over the amount requiring disposal under the Proposed Action, but is still negligible in terms of the annual amount of waste disposed of at the landfill and the overall landfill capacity of 1.6 million tons. Impacts could further be reduced if some of the waste is recycled or reused.

There would be an 83% increase in solid waste production on Vance AFB from residents, as the number of housing units will increase to 422. Similar to domestic wastewater generation and potable water consumption, overall solid waste generation in the community would not significantly change due to the number of increased personnel (and dependents) assigned to Vance AFB.

Mitigative Actions

No adverse impacts are expected as a result of implementing the Proposed Action, therefore, no mitigation measures are required.

Drainage

No Action Alternative

Under the No Action Alternative, there would be no change in the current infrastructure (including roads and pipes) and therefore, there would be no adverse impact from the No Action Alternative.

Proposed Action

The Proposed Action includes demolishing and rebuilding new infrastructure, including roads and pipes across the MFH area. These improvements would require re-grading of existing drainage ways and excavation and disturbance of areas currently stabilized with grass or pavement. Short-term increases in soil erosion and sediment loadings in storm water runoff would be expected. However, no significant impacts are expected from these activities as long

as best management practices are utilized. A construction storm water permit would be obtained from the ODEQ before any construction activities begin. As part of this permit, preparation and implementation of a SWPPP would be required to incorporate best management practices to prevent and/or minimize surface water quality impacts from construction activities. The SWPPP would include measures to control erosion and stormwater runoff through the use of permanent and temporary controls, including vegetation, buffer zones, silt fencing, and velocity dissipation devices.

The increase of impervious surface area that would result from the construction and demolition activities proposed (approximately 14 acres) would be negligible (2.3 percent) when compared to the total surface area of improved property at Vance AFB (612 acres). Drainage patterns at Vance AFB would remain the same after the Proposed Action is implemented.

No adverse impacts are expected from Proposed Action.

Maximum Development Alternative

As with the Proposed Action, the Maximum Development Alternative would include demolishing and rebuilding new infrastructure, including roads and pipes across the MFH area. Short-term increases in soil erosion and sediment loadings in storm water runoff would be expected. However, no significant impacts are expected from these activities as long as best management practices are utilized and a construction storm water permit is obtained from the ODEQ before any construction activities begin.

As with the Proposed Action, the increase of impervious surface area that would result from the construction and demolition activities proposed would be when compared to the total surface area of improved property at Vance AFB. Drainage patterns at Vance AFB would remain the same after the Proposed Action is implemented.

No adverse impacts are expected from the Maximum Development Alternative.

Mitigative Actions

Preparation and implementation of a SWPPP would include measures such as using silt fences or hay bales to minimize sediment loading of runoff. These measures would be temporary and utilized only during periods of construction or demolition.

Transportation

No Action Alternative

Under the No Action Alternative, similar impacts to those described for the proposed action would be caused by the demolition of one MFH unit. However, these impacts would be negligible compared to those of the Proposed Action.

Proposed Action

There would be a short-term increase in traffic counts resulting from the Proposed Action. Contractor personnel would enter the MFH area on a daily basis to accomplish demolition and construction activities. Increased traffic counts would be expected in the early morning hours as workers arrive at the job site and in the early evening as workers depart for the day. This increase in traffic would be short term and would typically coincide with the normal commuting patterns of Base occupants who work similar hours. Increased traffic from heavy equipment and roll-off dumpsters driving to and from the MFH area would also result in a short-term increase in the volume of traffic.

Although the majority of the roads on Base are in good condition, Elam Road, which is the primary route used by construction-related traffic is in very poor condition. An increase in the number of heavy loads that would be expected from construction equipment and roll-off dumpsters as a result of the Proposed Action would temporarily adversely affect existing road surface conditions during the construction phase of the project. Repair of small roadway sections may be required following completion of demolition and construction activities.

The number of MFH units would decrease by one unit. Therefore, the number of families living in the housing area would also decrease by 1. Changes in traffic counts on Vance AFB would be negligible as a result of the Proposed Action.

Maximum Development Alternative

As with the Proposed Action, there would be a short-term increase in traffic counts resulting from contractor personnel. This increase in traffic would typically coincide with the normal commuting patterns of Base occupants who work similar hours. Increased traffic from heavy equipment and roll-off dumpsters driving to and from the MFH area would also result in a short-term increase in the volume of traffic.

An increase in the number of heavy loads that would be expected from construction equipment and roll-off dumpsters as a result of this alternative would temporarily adversely affect existing road surface conditions during the construction phase of the project. Repair of small roadway sections may be required following completion of demolition and construction activities.

Because the number of MFH units would increase, the number of families living in the housing area would also increase. Long-term minor increases in traffic counts on Vance AFB would result from the Maximum Development Alternative.

Mitigative Actions

Because implementation of the Proposed Action would not cause negative long-term impacts to transportation infrastructure at Vance AFB, no mitigative measures would be required.

Electricity/Natural Gas

No Action Alternative

Under the No Action Alternative, there would be a slight reduction in the baseline conditions described in Chapter 3 due to the demolition of 1 unit.

Proposed Action

Although the Proposed Action slightly reduces the net number of MFH units, electricity and natural gas usage would likely increase due to the larger size of the new MFH units. However, this increase would likely be offset by implementing higher efficiency heating and air conditioning equipment.

Maximum Development Alternative

Given that the Maximum Development Alternative increases the net number of MFH units, electricity and natural gas usage would increase. Furthermore, the consumption per unit would also increase due to the larger size of the new MFH units. However, this latter increase would likely be offset by implementing higher efficiency heating and air conditioning equipment.

Mitigative Actions

Implementation of the Proposed Action would actually decrease overall energy demands; therefore, no mitigative actions would be required.

4.1.9 Earth Resources

The following factors were considered in evaluating potential impacts to earth resources: (1) the degree to which the Proposed Action could potentially disrupt the ground surface and destroy the soil profile through excavation and removal of rock and soil in the construction of facilities and (2) the degree to which the proposed or alternative actions could potentially increase erosion caused by the disturbance of the ground surface during the construction of facilities.

No-Action Alternative

Under the No-Action Alternative, there would be negligible disturbance during the demolition of 1 unit.

Proposed Action

The topography of the area would not change as a result of the proposed demolition and construction; however, the soil would be disturbed during demolition and reconstruction of the housing units. The area around the housing units would be cleared beginning with the demolition of the structures and would not be re-vegetated until construction is complete. During the de-vegetated time, if left unprotected, soil erosion would be rapid and severe. Before construction, a site-specific Storm Water Pollution Prevention Plan (SWPPP) describing erosion and storm water runoff control practices would developed to limit or eliminate soil erosion. Areas disturbed would be re-vegetated as soon as possible to avoid additional erosion of the soil.

There would be little effect on the soil profile in the area of the housing units during the construction. The soil in this area, except for the area where the current park is located, has been disturbed from past activities.

Maximum Development Alternative

As with the Proposed Action, the topography of the area would not change as a result of the Maximum Development Alternative; however, the soil would be disturbed during demolition and reconstruction of the housing units. The area around the housing units would be cleared beginning with the demolition of the structures and would not be re-vegetated until construction

is complete. During the de-vegetated time, if left unprotected, soil erosion would be rapid and severe. Before construction, a site-specific SWPPP describing erosion and stormwater runoff control practices will be developed to limit or eliminate soil erosion. Areas disturbed would be re-vegetated as soon as possible to avoid additional erosion of the soil.

There would be little effect on the soil profile in the area of the housing units during the construction. The soil in this area, except for the area where the current park is located, has been disturbed from past activities.

Mitigative Actions

A site specific SWPPP will be developed and implemented to prevent and minimize erosion. All areas disturbed would be re-vegetated as soon as possible to avoid additional erosion of the soil.

4.1.10 Water Resources

Impacts to surface water and groundwater resulting from the Proposed Action may occur if project activities resulted in:

- An increase in water usage from the underlying aquifer;
- Surface water quality declining;
- Violation of water quality standards or other applicable regulations; and/or
- Water availability issues.

Surface Water

No Action Alternative

Under the No Action Alternative, there would be no change in the baseline conditions described in Chapter 3.

Proposed Action

The Base currently has approximately 612 acres of improved property (USAF, 2003a). The Proposed Action will increase the improved land by approximately 14 acres. This increase would be negligible as it compares to the total area of improved land currently at Vance AFB. However, as a result of the Proposed Action, there would be a potential for increased sediment loading of surface water during the initial demolition and construction activities. This potential

is short term and is manageable through implementation of a SWPPP. Following completion of the project and re-vegetation of the land surface, impacts to surface water would not be different from the baseline conditions described in Chapter 3. Implementation of the Proposed Action would not have long-term adverse impacts on surface water quality or quantity on Vance AFB or downstream surface water bodies. Implementation of the Proposed Action is expected to have no adverse effects on water quality.

Maximum Development Alternative

The Base currently has approximately 612 acres of improved property (USAF, 2003a). As with the Proposed Action, the Maximum Development Alternative may increase the improved land by another 14 acres. This increase would be negligible as it compares to the total area of improved land currently at Vance AFB. However, as a result of this alternative, there would be a potential for increased sediment loading of surface water during the initial demolition and construction activities that can be minimized through the implementation of a SWPPP. Implementation of the Maximum Development Alternative is expected to have no adverse effects on water quality.

Mitigative Actions

In order to minimize the potential for increased sediment loading of downstream surface water bodies, a SWPPP should be implemented as discussed above. No other mitigative actions would be required due to the absence of long-term adverse impacts to surface water quality or quantity.

Groundwater

No Action Alternative

Under the No Action Alternative, there would be no change in the baseline conditions described in Chapter 3.

Proposed Action

Implementation of the Proposed Action would not impact the quality or quantity of groundwater at Vance AFB or the surrounding area. Excavation for new home construction is not expected to reach the water table. Depth to groundwater in the area of the MFH units is over 6 feet. However, excavation of utility lines may possibly reach the water table. In the event that groundwater is encountered during new home construction and/or installation of utility lines,

care would be taken during construction activities to ensure that groundwater resources are protected from contamination.

Maximum Development Alternative

Implementation of the Maximum Development Alternative would not impact the quality or quantity of groundwater at Vance AFB or the surrounding area. Excavation for new home construction is not expected to reach the water table. However, excavation of utility lines may possibly reach the water table. As with the Proposed Action, in the event that groundwater is encountered during new home construction and/or installation of utility lines, care would be taken during construction activities to ensure that groundwater resources are protected from contamination.

Mitigative Actions

There are no adverse impacts to groundwater resources anticipated to result from the Proposed Action, therefore no mitigative actions are required. As mentioned above, if groundwater is encountered during construction activities, care would be taken during construction activities to ensure that groundwater resources are protected from contamination.

Floodplains

No Action Alternative

Under the No Action Alternative, there would be no change in the baseline conditions described in Chapter 3

Proposed Action

As discussed in Chapter 3, there are no known wetlands or floodplains within the boundaries of the MFH area. No adverse impacts to floodplains and wetlands are expected from the Proposed Action.

Maximum Development Alternative

No adverse impacts to floodplains and wetlands are expected from the Maximum Development Alternative.

Mitigative Actions

No mitigative actions would be required.

4.1.11 Biological Resources

Potential impacts to biological resources were determined by analyzing the Proposed Action within the context of the importance of the existing resources, the sensitivity of those resources, and the duration of the Proposed Action. In addition, impacts were evaluated based on whether the Proposed Action would:

- Affect threatened or endangered species;
- Substantially diminish natural habitats for a plant or animal species;
- Substantially interfere with wildlife movement or reproductive behavior; and
- Infuse exotic plant or animal species.

Ground disturbance associated with construction may directly or indirectly cause potential impacts to biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in reference to important biological resources. Ground disturbance can potentially degrade biological habitats.

No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Chapter 3.

Proposed Action

Vegetation and Wildlife. Impacts to local fish and wildlife populations can occur from sediment erosion and runoff resulting from construction activities. The demolition and construction activities would be limited to lawn, landscaped areas, and agricultural areas. Affected areas would be revegated to native grasses and forbs, where feasible, following the construction and/or demolition period, in accordance with the site specific SWPPP. Although short-term, localized minor effects could be expected on vegetation in proximity to the construction and demolition sites, no adverse effects would be expected as a result of implementation of the Proposed Action at Vance AFB.

Most of the area associated with the Proposed Action consists of disturbed, landscaped, paved, or mowed lands, including the 10-acre site where there is currently a park. However, the

habitat value of the open space (park) is low due to fragmentation. Construction activities would not impact habitat available to the wildlife species that occur at Vance AFB or within the proposed MFH expansion area. This assessment is based on the limited extent of areas that would be affected by the Proposed Action.

Threatened and Endangered Species. No Federal- or state-listed threatened or endangered plant species are known to occur within a 50-mile radius of Vance AFB. Therefore, no impacts are anticipated.

Wetlands. As stated in Chapter 3, no jurisdictional wetlands are located on or in the vicinity of the MFH area. Therefore, no impacts to wetlands or regulated waterways are expected.

Maximum Development Alternative

Although short-term, localized minor effects could be expected on vegetation in proximity to the construction and demolition sites, no adverse effects would be expected as a result of implementation of the Maximum Development Alternative at Vance AFB.

Construction activities would not impact habitat available to the wildlife species that occur at Vance AFB or within the proposed MFH expansion area. This assessment is based on the limited extent of areas that would be affected by the Maximum Development Alternative.

Mitigative Actions

Best management practices during construction and repair activities would minimize impacts on vegetation. Mixed grasses would be restored by reseeding with native grasses. Mitigation measures for other biological resources would not be anticipated.

4.1.12 Cumulative Effects

A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

As described in Chapter 2, other proposed projects are either underway or planned at Vance AFB and surrounding areas. This EA addresses the environmental impacts of these other actions only in the context of potential cumulative impacts, if any. Actions considered for cumulative effects are listed below:

- The City of Enid and the State of Oklahoma Southgate road improvements (to be completed in 2005)
- Site Development for the Westgate Shopping center (to be completed by end of 2005)
- Construction of 54 new MFH units (was just completed in early 2005)
- Replacement of T-37 aircraft with T-6A aircraft (to be completed in 2005)
- Development of the Baker Tract property and relocation of the main entrance to the base to the north (not expected to be funded until 2010)

The first four actions described above will be completed prior to initiation of the Proposed Action and therefore, no further evaluation of the cumulative impacts from those activities will be carried forward as part of this EA. Funding for the development of the Baker Tract property is not expected prior to FY2010, and the development of this property is speculative at this time. However, there is a possibility that MILCON funding could be made available earlier than projected and that such action will coincide in time with the Proposed Action. Under the vision 2025 plan, Vance AFB has the following proposed facilities listed as potential development for the Baker Tract property, which are subject to change:

- Vance Air Force Base Protection Enhancement Facilities;
  - Extension to Elam Road,
  - Crossover road,
  - Main Gate,
  - Industrial Gate,
  - Personal Operated Vehicle (POV) Inspection areas,
  - Truck Inspection Area,
  - Overwatches, and
  - Visitor Center
- Army and Air Force Exchange Services Service Station;
- Golf Driving Range;
- Maintenance Hangar;
- Fire Station;

- Liquid Oxygen (LOX) Storage Facility;
- Extension to aircraft parking apron; and
- Vehicular parking.

(Stidham, 2005)

Given that the plans for the proposed development are speculative in nature, potential cumulative impacts from this development will be discussed qualitatively.

Noise. Noise impacts associated with the Proposed Action at Vance AFB are short term in nature and, therefore would not accumulate over time or contribute to cumulative noise effects.

Land Use. The Proposed Action would not change land use patterns on Vance AFB, and would, therefore, not contribute to cumulative effects to land use.

Air Quality. The Proposed Action would result in short-term air emissions during construction and demolition of the existing and new homes and associated infrastructure, principally from site clearing/preparation activities and the use of construction equipment and related vehicles. There would be no or a negligible increase in long-term emissions as it is assumed that POV use would remain the same and all boiler and generators associated with the housing would be comparable to those already in use.

Air emissions for development of the Baker Tract property would also be of short duration and therefore, no cumulative effects are expected.

Socioeconomic Resources. The Baker Tract property development may increase expenditures in the local area. Since cost and timing data for development of the Baker Tract property are currently unavailable and MILCON funding is not expected to be secured until FY 2010, the extent of these cumulative impacts cannot be predicted at this time.

Housing. No increase or decrease of available housing units as a result of development of the Baker Tract property is expected. No cumulative impacts are expected as a result of the Baker Tract property development project.

Education. The nature of the Baker Tract property development is not likely to result in changes to the education services provided in the local community. Changes to school enrollment as a result of the Proposed Action and development of the Baker Tract property is not likely as there will be no change in the overall number of MFH units.

Cultural Resources. The Proposed Action would not affect cultural resources in or around Vance AFB, and would, therefore, not contribute to cumulative effects to cultural resources.

Hazardous Materials and Wastes. The Proposed Action would require the management of ACM and LBP during demolition of existing MFH units. Management of these waste streams would occur under existing Vance AFB management programs and would not result in adverse effects. The potential for the presence and management of pesticide-impacted soils beneath existing MFH units would also not result in adverse effects. Therefore, the Proposed Action would not contribute to cumulative effects to hazardous materials and wastes in or around Vance AFB.

Infrastructure and Utilities. The Proposed Action would negligibly change overall wastewater generation, potable water usage, or electricity and natural gas consumption and, would therefore, not significantly contribute to cumulative effects to these resources.

The Baker Tract property is currently vacant and therefore, no additional solid waste generation associated with demolition activities would occur at the time of development. However, additional solid waste generation may result from any construction activities occurring at the Baker Tract property, including gate and road improvements, and construction of the other facilities described above. To date, there is no information available to quantify the cumulative impact from this action. If the construction of any of those facilities coincides in time with the Proposed Action, an increase in solid waste generation would be expected. However, the City of Enid's landfill should have sufficient capacity to handle the waste disposal needs of all of those projects, even if they happened concurrently.

Short-term increases in soil erosion and sediment loadings in storm water runoff resulting from Proposed Action drainage improvements would contribute slightly to cumulative effects of the development of the Baker Tract property, to the extent that both actions coincide in time.

Increased vehicular traffic resulting from the Proposed Action, along with increased traffic from the Baker Tract property development activities would contribute to increased traffic counts. Traffic carrying heavy loads also has the potential to cause damage to roadways not designed to support continued heavy equipment traffic for an extended period.

Earth Resources. The Proposed Action would not affect earth resources in or around Vance AFB, and would therefore, not contribute to cumulative effects to earth resources.

Water Resources. The Proposed Action would not affect water resources in or around Vance AFB, and would therefore, not contribute to cumulative effects to water resources.

Biological Resources. Because there would be no adverse effects to vegetation, wildlife, threatened and endangered species, or wetlands; implementation of the Proposed Action would not contribute to cumulative effects to these resources.

Cultural Resources. Because there would be no adverse effects to cultural resources; implementation of the Proposed Action would not contribute to cumulative effects to these resources.

Minor unavoidable impacts on noise, air, and soil, when added to the other foreseeable projects in the area, are all still temporary in nature, and the cumulative impacts are insignificant.

4.1.13 Unavoidable Adverse Environmental Impacts

Unavoidable impacts would result from implementation of the Proposed Action; however, none of the impacts would be significant. Noise from construction and demolition activities would occur; however, the activities would take place during daytime hours and would be at levels that would not cause hearing impairment. The emission of air pollutants associated with heavy equipment operation during construction and demolition activities would be an unavoidable condition, but would not exceed any of the NAAQS for the area. Site grading during construction would remove minimal vegetation. The use of nonrenewable energy resources is unavoidable, but the amount used would be minor.

4.1.14 Irreversible and Irretrievable Commitment of Resources

NEPA also requires that environmental analysis include identification of "… any irreversible and irretrievable commitments of resources which would be involved in the

Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the use of these resources would have on consumption or destruction of a resource that could not be replaced in a reasonable period of time.

The irreversible environmental changes that could result from implementation of the Proposed Action include the consumption of material resources, energy resources, and human resources.

Material resources used for the Proposed Action include materials for facility construction. The materials that would be consumed are not in short supply and are readily available from suppliers in the region. Use of these materials would not limit other unrelated construction activities.

Energy resources would be irretrievably lost. These include petroleum-based products such as gasoline and diesel fuel. During facility construction, gasoline and diesel fuel would be used for operation of equipment and other vehicles. Consumption of these energy resources would not place an unreasonable demand on their availability in the region. Therefore, no adverse impacts would be expected.

The use of human resources for facility construction is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

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Enid, OK 73702

Robert Hitt
Flood Plain Administor
Director of Development Services
City of Enid
P.O. Box 1768
Enid, OK 73072

AIR FORCE INDIVIDUALS

HEADQUARTERS AIR EDUCATION AND TRAINING COMMAND (HQ AETC)

Marc Wilson (HQ AETC/CEVN) (Booz Allen Hamilton)
Garrett Smith (HQ AETC/CEPH) (Booz Allen Hamilton)

AFCEE
Tom Woosley (AFCEE/HDP)

VANCE AIR FORCE BASE, OKLAHOMA
Mark Buthman (Dyn CEV) - Base Point of Contact, Natural Resource Specialist, and NEPA
Lt. Col. Bob Mitchell (71M56)
TSgt. John Whiteaker (71MDOS/SGOAB)- BioEnvironmental sampling
Tom Ireland (Dyn CEOR)- Housing Office Manager
Danika Stidham (Dyn CEEP)- Base Community Planner
Robert Gallegos (71 LRS/CE)
Lewis Hollis (71LRS/CE)
Col. Donita Hazlett (71 LRS)
Bob Farrell (71 FTW/PA)
Captain Michelle Crawford (71 FTW/JA)
Robert F. Ray (71 CRS/CE) (Booz Allen Hamilton)
Marilyn Wells – IRP Manager
John Felt Jr. – Specialist in charge of asbestos, lead-based paint, PCBs, USTs/ASTs
Richard Johndrow – Pesticide/Pest Control Foreman
Dennis Burnett - Housing Maintenance Foreman
Marvin Batterman – Real Property
Richard Patton - Infrastructure Manager and/or Zone Maintenance Superintendent

CHAPTER 7

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Appendix A

Letter from Oklahoma Historical Society Regarding Presence of Historical Integrity in MFH Area

Oklahoma Historical Society

Founded May 27, 1893

State Historic Preservation Office • 2704 Villa Prom • Shepherd Mall • Oklahoma City, OK 73107-2441
Telephone 405/521-6249 • Fax 405/947-2918

January 30, 2003

Mr. Mark Buthman
Dept. of the Air Force, Dyn CEV
140 Channel Street, Suite 231
Vance AFB, OK 73705-5623

RE: File #0509-03; Vance AFB Proposed Upgrades to Family Housing

Dear Mr. Buthman:

We have received and reviewed the documentation concerning the referenced project in Grant County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

Based on a site visit by Charles Wallis and Jim Gabbert of my staff on 1/27/03, it is our opinion that none of the facilities, family housing or the adjacent park and open land to be impacted by Phase I, retain enough historic integrity to be considered for inclusion in the National Register. This assessment includes the entire Family Housing area.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

Should further correspondence pertaining to this project be necessary, the above underlined file number must be referenced. If you have any questions, please contact Mr. Jim Gabbert, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,

Melvena Heisch

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

Appendix B

Interagency Coordination

Department of the Army
Corps of Engineers, Tulsa District
Planning, Environmental, and Regulatory Division
Regulatory Branch
1645 South 101st East Avenue
Tulsa, OK 74126-4909

Dear Sir:

The United States Air Force is preparing an Environmental Assessment under the National Environmental Policy Act to assess the impacts of a proposal to privatize military family housing (MFH) at Vance AFB. The environmental review process for this proposal is being conducted by the 71st Flying Training Wing of the Air Education and Training Command in accordance with the Council on Environmental Quality guidelines. In summary, the Air Force is proposing to convey 230 existing housing units to a privatization contractor for operation and maintenance over a 50-year period. The Government would retain ownership of the underlying land and lease it to the private developer.

Vance AFB recently demolished and reconstructed 54 MFH units that meet current Air Force standards. Therefore, the developer is unlikely to make any modifications to 54 of the existing 230 MFH units. The Air Force has designated the remaining 176 MFH units as inadequate. Due to the scope of renovations required to bring the 176 MFH units up to AF standards, renovation costs are projected to exceed 70% of replacement costs. In addition, although renovations would upgrade the interior of the MFH units, the square footage would remain below AF standards. Adding onto the existing units would address the square footage issue. However, this approach would reduce the amount of space between housing units, which would have a negative impact on the neighborhood. Given the extent of renovations required and the need to increase the square footage, the developer will likely demolish and reconstruct the 176 inadequate units. As previously stated, the private developer would be responsible for maintaining and managing a total of 230 MFH units.

The overall purpose of the project is to provide a feasible way to accelerate housing improvements to:

1. Provide adequate housing for military families; and
2. Achieve the objectives of the Defense Planning Guidance to eliminate inadequate housing.

Chapters 1 and 2 of the Environmental Assessment (EA), also referred to as the Description of the Proposed Action and Alternatives (DOPAA), include details of the proposed and alternative actions. In summary, Chapter 1 contains a statement of the purpose of and need for action and Chapter 2 provides a more detailed description of the proposed action. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your assistance in reviewing the DOPAA, and solicit any particular concerns or recommendations you may have with respect to this project. Please send your environmental comments to Mr. Mark Buthman at the following address by May 29, 2005.

Mark H. Buthman
Deputy Environmental Branch Manager
CSC Civil Engineering Environmental Management
140 Channel Street, Suite 231
Vance Air Force Base, OK. 73705-5623

If there are any questions, please contact Mr. Mark Buthman at (580) 213-7344. Written correspondence can be mailed to Mr. Mark Buthman at the address previously provided.

Thank you for your assistance in this matter.

Sincerely,

Bryan J. Benson, Colonel, USAF

Attachments:

1. Description of Proposed Action and Alternatives (DOPAA)
2. Interagency and Intergovernmental Coordination for Environmental Planning Distribution List

CHAPTER 1
PURPOSE OF AND NEED FOR ACTION

This section has six parts: a statement of the purpose of and need for action, a description of the location of the proposed action, identification of the decision to be made, a description of the scope of the environmental review, identification of applicable regulatory requirements, and an introduction to the organization of the document.

This environmental assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) parts 1500-1508, 32 CFR 989 Environmental Impact Analysis Process (EIAP), and Air Force Instruction 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP).

1.1 PURPOSE OF AND NEED FOR ACTION

As of March 2004, the U.S Air Force (AF) operated and maintained approximately 104,000 housing units (Diamond, 2004). Many of these homes were constructed in the 1950s and 1960s and do not meet modern standards. The AF estimates that approximately 40% of the existing housing inventory is inadequate (Diamond, 2004). To address the problem of inadequate housing, the Office of the Secretary of Defense (OSD) Planning Guidance requires that all Services "revitalize, divest through privatization, or demolish inadequate housing by or before 2010" (OSD 1997). Under the traditional Military Construction (MILCON) funding approach, upgrading the existing housing inventory for all Services would take approximately 20 years at a cost of $16 billion (OSD 2005).

In the absence of sufficient available MILCON funding to meet the OSD requirements, Congress enacted the Military Housing Privatization Initiative (MHPI) in the 1996 Defense Authorization Act. Under the MHPI authorities, the AF and other Services are authorized to address housing needs by utilizing privately financed and privately built housing where economically feasible. The MHPI has been designated a President's Management Agenda Initiative, and both Secretary Rumsfeld and President Bush have made it a priority to eliminate inadequate family housing units by 2007, moving the Department of Defense (DoD) deadline up from 2010 (OSD, 2005).

The AF has developed a Family Housing Master Plan (FHMP), which, based on a detailed economic analysis and evaluation of feasibility criteria identifies installations that are appropriate candidates for privatization. Vance Air Force Base (AFB) has been identified in the FHMP as a base suitable for privatization.

Vance AFB currently has 230 military family housing (MFH) units in its inventory, which is one more unit that the required inventory. All of these units are considered eligible for privatization. Of the 230 units, 54 were demolished in 2004 and are currently being reconstructed. The remaining 176 units were constructed in the late 1950s, early 1960s, and are considered inadequate. The size of the 176 inadequate units ranges from 950 square feet to 1,800 square feet. Complete replacement of these 176 units is necessary because these units no longer meet minimum AF requirements for adequate, modern housing described in the OSD 2010 guidance.

There is a significant desire of military members to occupy MFH at Vance AFB. The occupancy rate has remained at 98% for the last three years and the waiting period can be as much as 6 months. MFH privatization at Vance AFB would provide a feasible way to accelerate housing improvements to (1) provide adequate housing for military families, and (2) achieve the objectives of the Defense Planning Guidance.

1.2 LOCATION OF PROPOSED ACTION

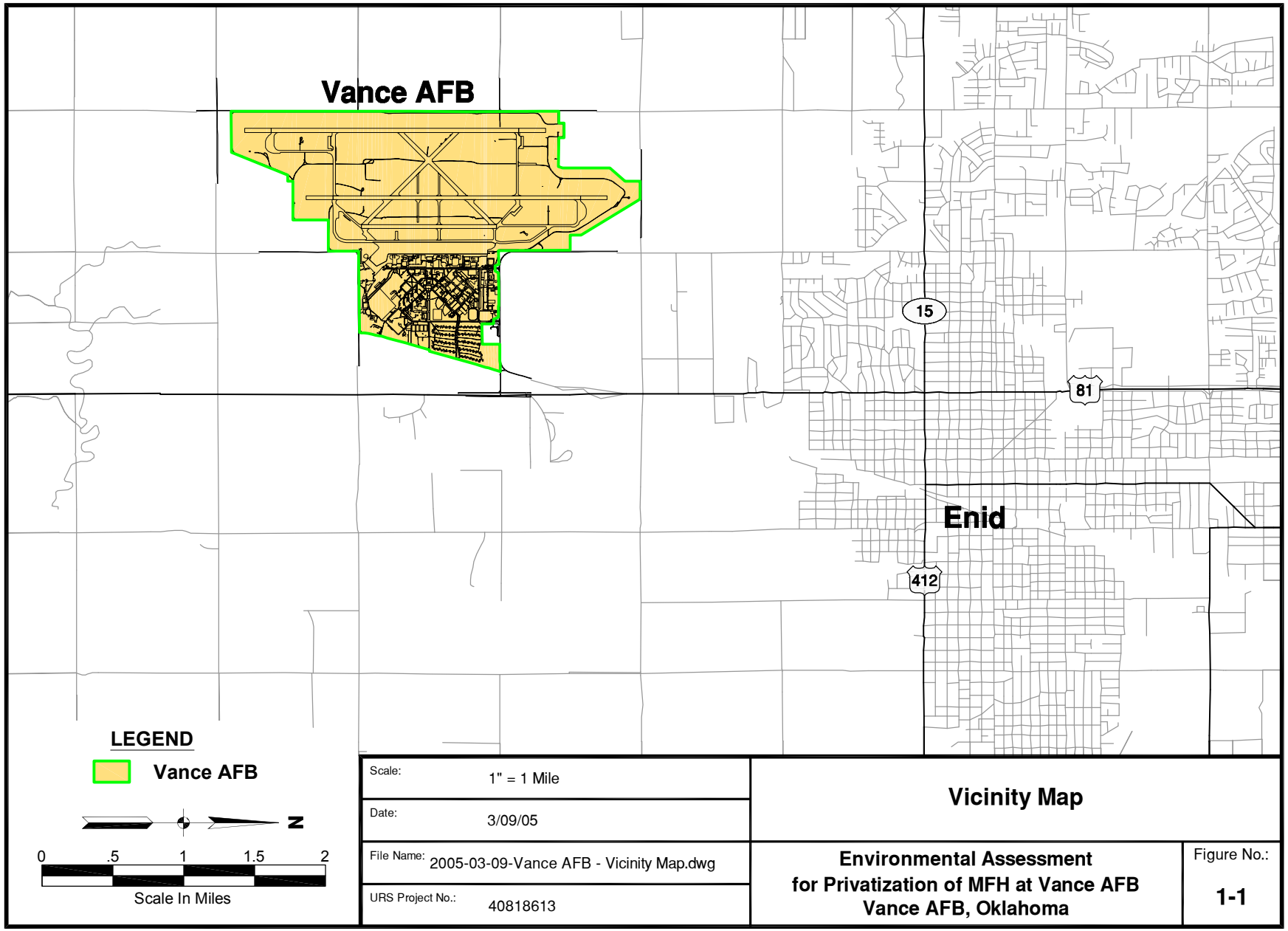
Vance AFB is located in north-central Oklahoma in Garfield County, just south of the City of Enid (Figure 1-1). The base encompasses approximately 2,000 acres. Land use around the base is a mixture of residential, agricultural, and commercial. The MFH area at Vance AFB is located at the northeast boundary of the Base, as shown on Figure 1-2. The MFH area consists of a total of approximately 80 acres. This includes 10 acres of land at the northern end of the MFH area that was annexed and includes some of the 54 MFH units newly constructed in 2005 and 10 acres to the south end of the MFH area that is currently a park and will be converted to MFH as part of the proposed action.

1.3 DECISION TO BE MADE

The EA will document analysis of the potential environmental impacts of Vance AFB's Proposed Action and the No Action Alternative. Based on the information presented in the EA, the Air Education and Training Command (AETC) will determine whether to prepare a Finding of No Significant Impact (FONSI) or to prepare an Environmental Impact Statement (EIS). A FONSI would be appropriate if the analyses presented in the EA indicate that implementation of the Proposed Action would not result in significant environmental impacts. If significant environmental issues arise that cannot be mitigated to insignificance, an EIS would be required. As required by NEPA and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project, and be available to inform decision-makers and the public of the potential environmental impacts of selecting the Proposed Action or the No Action Alternative.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

Congress passed the National Environmental Policy Act (Public Law (PL) 91-190), or NEPA, in 1970. The primary purpose of NEPA was to ensure that federal agencies consider the effects of Federal funding on certain environmental resources and allow for public involvement in the decision-making process. Under NEPA, federal agencies are required to systematically assess the environmental consequences of their proposed actions before making a final decision on the proposed action. The CEQ was established under NEPA to issue regulations and guidance regarding NEPA compliance and oversee the efforts of federal agencies to implement NEPA programs. The CEQ issued NEPA implementation regulations in 1978. These regulations are included in Title 40 CFR Parts 1500-1508.



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Vicinity Map

Environmental Assessment for Privatization of MFH at Vance AFB Vance AFB, Oklahoma

Figure No.: **1-1**

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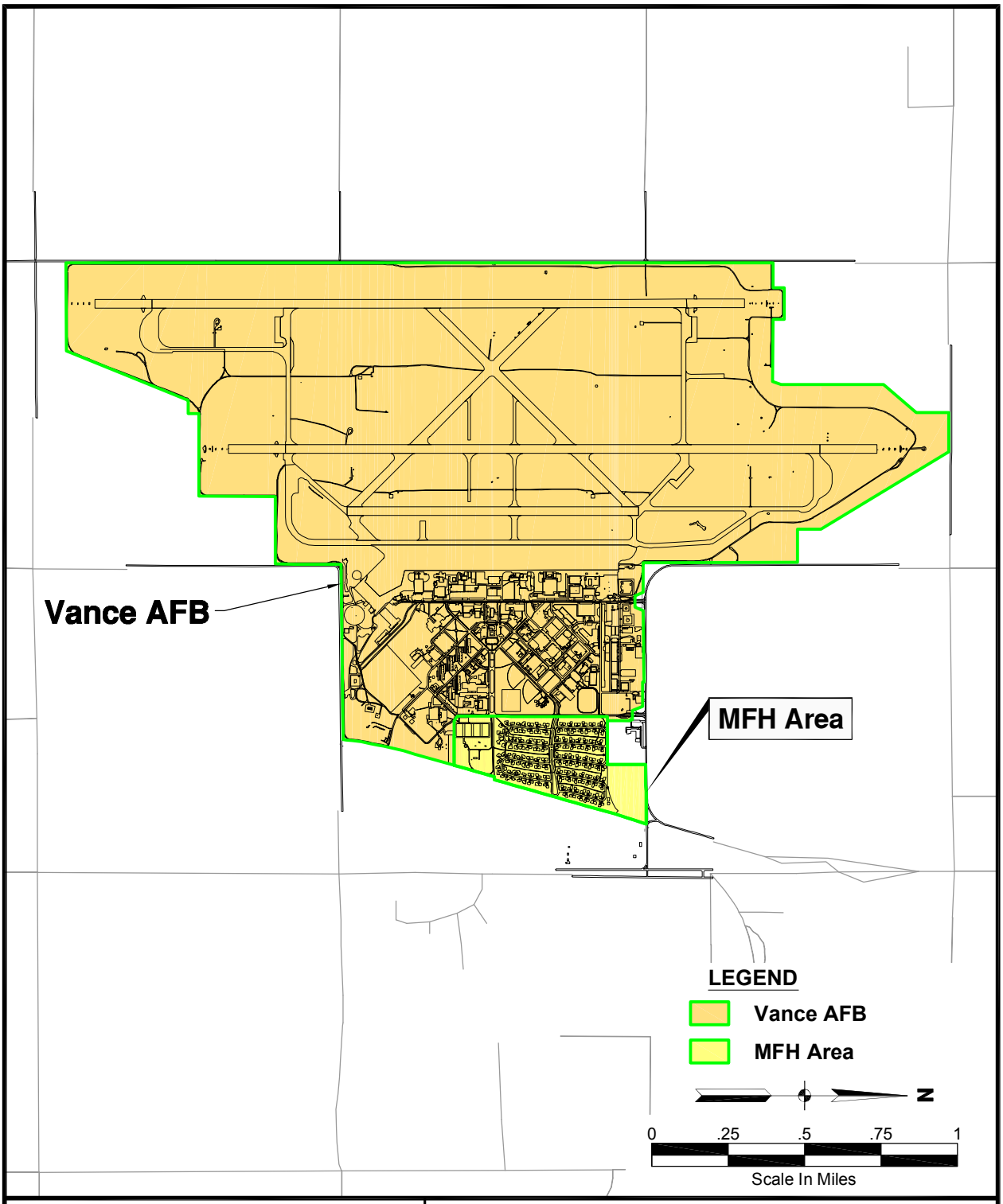

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URS Project No.: 40818613			

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This EA will describe and evaluate the potential environmental impacts associated with the privatization of 230 MFH units and the demolition and reconstruction of 176 MFH units at Vance AFB. As appropriate, the affected environment and environmental consequences of the action may be described in terms of a regional overview or a site-specific description. Although mitigation measures are not required, this EA will identify operating procedures that could be implemented to further minimize environmental impacts. FY2004 or the most current information will be used as the baseline condition.

The resource areas that have been identified for study at Vance AFB include:

- Safety,
- Noise,
- Air quality,
- Earth resources,
- Water resources,
- Infrastructure and utilities,
- Hazardous materials and wastes,
- Biological resources,
- Cultural resources,
- Land use, and
- Socioeconomic resources and Environmental Justice.

The assessment of potential impacts in the EA will take into consideration possible cumulative impacts from other actions expected to be ongoing during the proposed action, either at or near Vance AFB or in the City of Enid. The CEQ defines a cumulative impact in 40 CFR 1508.7 as the "impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." The environmental impacts of actions currently underway at Vance AFB have been analyzed in separate NEPA documents. Environmental impacts of future actions at Vance AFB will be evaluated in the context of potential cumulative impacts, if any. Based on an interview with the City of Enid Planning Administrator, no actions are likely to be ongoing either in the City of Enid or around the base while the proposed action is being implemented (Bauer, 2004).

1.5 APPLICABLE REGULATORY REQUIREMENTS

This EA will comply with NEPA, the CEQ regulations, CFR 989 Environmental Impact Analysis Process (EIAP), and AF Instruction 32-7060, Interagency and Intergovernmental

Coordination for Environmental Planning (IICEP). The EA will consider all applicable laws and regulations, including but not limited to the following:

- National Historic Preservation Act (NHPA)
- Archaeological Resources Protection Act (ARPA)
- Clean Air Act (CAA)
- AFI 32-7040, Air Quality Compliance
- Clean Water Act (CWA)
- Endangered Species Act (ESA)
- Pollution Prevention Act (PPA)

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA will be organized into seven chapters. Chapter 1 will contain a statement of the purpose of and need for action, a description of the location of the proposed action, identification of the decision to be made, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a description of the organization of the EA. Chapter 2 will describe the history of the formulation of alternatives and the alternatives eliminated from further consideration, provide a detailed description of the proposed action, describe the no action alternative, summarize other actions announced for Vance AFB and the surrounding community, provide a comparison matrix of environmental effects for all alternatives, identify the preferred alternative, and discuss the mitigation measures and best management practices that could reduce the potential for impacts. Chapter 3 will contain a general description of the current conditions of the biophysical resources that potentially could be affected by the proposed or alternative actions. Chapter 4 will include an analysis of the environmental consequences. Chapter 5 will list the preparers of this document. Chapter 6 will list the persons and agencies consulted in the preparation of this EA. Chapter 7 will include a list of source documents relevant to the preparation of this EA.

CHAPTER 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter is composed of eight sections: a brief history of the formulation of alternatives, identification of alternatives eliminated from further consideration, a detailed description of the proposed action, a description of the no action alternative, identification of other proposed actions planned for Vance AFB, a summary of environmental impacts of all alternatives, identification of the preferred alternative, and a discussion of mitigation measures and best management practices that could reduce the potential for impacts.

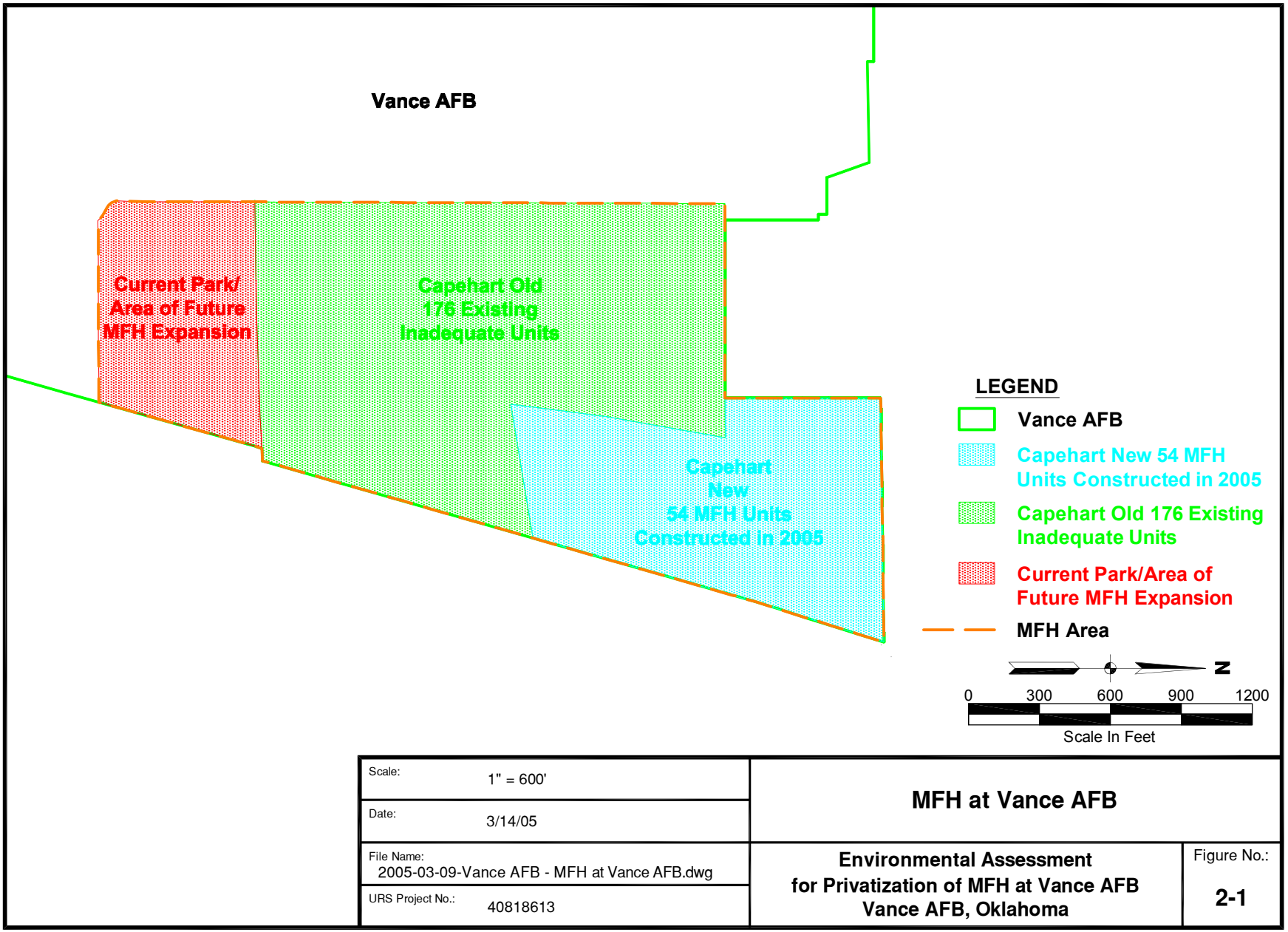
2.1 HISTORY OF THE FORMULATION OF ALTERNATIVES

The current number of MFH units at Vance AFB is 230 units, one more unit than the Housing Resource Market Analysis (HRMA) requirement of 229 units. At the time the OSD Guidance to upgrade inadequate housing was published, all of the housing units at Vance were approaching 40 years old. To address the OSD directive, Vance AFB developed a multi-phase plan to replace all MFH units. The purposes of implementing a phased approach were to minimize displacement of military families while improvements were being made and to address the most inadequate units first.

Phase I of the plan included demolition and replacement of 54 units located in the northeastern corner of the housing area (see Figure 2-1). Based on an economic analysis conducted by the Vance AFB Facilities Management Office in 2002 and an EA completed in 2003, demolition and replacement was determined to be the most effective method for bringing the Phase I units up to AF standards (71 FTW, 2003). Based on this determination, 54 units were demolished in 2004 and are currently being rebuilt using MILCON funding. Although 54 units have been upgraded to modern standards, as of 2005, 176 inadequate units remain in the Vance inventory.

Since the 2002 decision to demolish and reconstruct the 54 units discussed above, AETC has completed an in-depth analysis of the housing requirements and needs at Vance AFB and determined that privatization is the most cost-effective investment option for Vance AFB to meet its MFH requirements consistent with Congressional and OSD constraints and directives. Therefore, the original plan to upgrade the MFH units in three phases was superseded by the recommendation to privatize. The proposed action to convey the 230 units to a private contractor with demolition and reconstruction of the remaining 176 inadequate units was developed based on AETC's analysis.

Two alternative actions were considered but eliminated from consideration (see Section 2.2). Inclusion of the no action alternative is required per the CEQ regulations and serves as a benchmark against which the proposed action can be evaluated. The following sections briefly describe the two alternative actions eliminated from consideration, the proposed action, and the no action alternative.



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URS Project No.: 40818613		

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2.2 IDENTIFICATION OF ALTERNATIVES ELIMINATED FROM CONSIDERATION

Two alternatives to the proposed action were initially considered for the 176 units but ultimately eliminated from further consideration: 1) privatization and subsequent renovation, and 2) renovation and/or demolition and construction using MILCON funding.

Privatization and subsequent renovation of the 176 inadequate units: Due to the scope of renovations that would be required to bring the units up to AF standards, renovation costs are projected to exceed 70% of replacement costs. AF guidelines do not allow renovations if the cost exceeds 70% of replacement costs. In addition, although this alternative would upgrade the interior of the MFH units to modern standards, the square footage would remain below AF standards. Adding onto the existing units would address the square footage issue. However, this approach would reduce the amount of space between housing units, which would have a negative impact on the neighborhood.

Renovation and/or demolition and construction using MILCON funding: As stated above, renovation is not a viable alternative given the costs and square footage requirements. In addition, sufficient MILCON funding will not be available to demolish and reconstruct the 176 inadequate units by FY 2007.

2.3 DETAILED DESCRIPTION OF PROPOSED ACTION

The proposed action is to convey 230 housing units to a privatization contractor for development, operation, and maintenance over a 50-year period. The Government would retain ownership of the underlying land and lease it to the private developer. The existing housing inventory includes the 54 newly constructed MFH units and 176 existing units that do not meet current AF housing standards. It is expected that the privatization contractor will demolish the existing 176 inadequate units and construct 176 new housing units meeting current AF housing standards.

All of the utility lines (water, sewer, and gas mains and laterals) in the housing area would be replaced when the new homes are constructed. In addition, with the exception of the main road in the middle of the housing area, most of the existing roads will be demolished and replaced with new roads based on the revised housing configuration. The existing wastewater pump station will remain in operation and will be conveyed to the privatization contractor.

The existing park will be eliminated to make space for the newly constructed housing. However, smaller playground areas would be constructed throughout the newly developed housing area. The privatization contractor will likely construct a club house/maintenance building that could be used by military personnel for social functions as well as to provide office space for maintenance personnel and storage space for maintenance equipment. Although no final plans have been established for this building, the EA will include a discussion of the potential for this structure.

To minimize displacement, the privatization contractor will be required to phase construction activities such that the minimum required number of 229 homes would be available to military personnel while construction activities are ongoing. This requirement would most likely dictate

that the first phase of new homes be constructed on the parcel of property that is currently being used as a playground.

2.4 DESCRIPTION OF THE NO ACTION ALTERNATIVE

Under the no action alternative, Vance AFB would continue to provide for the housing needs of base personnel through traditional MILCON funding. The Air Force would retain all 230 MFH units at Vance AFB and there would be no change from existing conditions. The existing inadequate units would continue to degrade and AF members and their families would continue to live in substandard housing. In addition, there would be substantial inequities between the 54 newly constructed homes that have a minimum square footage of 1,760 square feet and the 176 existing inadequate homes where the average square footage is 1,200 square feet. Furthermore, Vance AFB would not be in compliance with the OSD 2010 directive.

2.5 OTHER ACTIONS PLANNED FOR VANCE AFB AND SURROUNDING COMMUNITY

Based on an interview with the City of Enid Planning Administrator, in 2005 the City of Enid and the State of Oklahoma will be conducting roadway improvements on Southgate Road between 81 West and Cleveland Street (Bauer, 2004). This roadway is located a few miles north of Vance AFB. The City of Enid anticipates that the roadway improvements will be completed by October 2005, well before the proposed action is implemented. In February 2005, the Enid Metropolitan Area Planning Commission approved a site development plan for Westgate Shopping Center that includes construction of a 3,700 square foot retail building (Barron 2005). However, based on an interview with the City of Enid Planning Assistant, construction is expected to be completed by the end of 2005 (Ruther, 2005). There are no other actions planned by the City of Enid in the foreseeable future (Bauer 2004 and Ruther 2005).

There are two actions currently underway at Vance AFB that may result in cumulative impacts:

1. Construction of the 54 new family housing units, and
2. Replacement of T-37 aircraft with T-6A aircraft.

Both actions are expected to be completed prior to initiation of the proposed MFH privatization project. Therefore, these activities will not be evaluated in the cumulative impacts assessment. Vance AFB has requested funding to develop the Baker Tract of property and move the main entry of the base to the north. Although funding for this initiative is not expected prior to FY2010, there is always a possibility that MILCON funding would be made available earlier than projected. Therefore, a brief analysis of this potential future action will be included in the assessment of cumulative impacts should the Baker Tract be developed concurrent with construction and demolition activities undertaken by the privatization contractor.

2.6 COMPARISON MATRIX OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2-1 summarizes the effects of the proposed action and no action. The no action alternative describes the baseline conditions.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The preferred alternative is to privatize MFH at Vance AFB as described in Section 2.3, Proposed Action.

Table 2-1 Summary of Environmental Effects

Resource	Proposed Action Conveyance of 230 units, demolition of 176 existing inadequate units and construction of 176 adequate units	No Action Alternative
Safety		
Noise		
Land Use		
Air Quality		
Socioeconomic Resources		
Cultural Resources		
Hazardous Materials and Wastes		
Infrastructure/ Utilities		
Earth Resources		
Water Resources		
Biological Resources		

2.8 MITIGATION MEASURES/BEST MANAGEMENT PRACTICES

Based on the analysis of potential environmental effects, mitigation measures may not be necessary for the proposed action. However, best management practices for specific resources would be implemented as part of the proposed action as a means to further minimize environmental impacts. Table 2-2 presents these best management practices, which are further discussed in Chapter 4, Environmental Consequences.

Table 2-2. Preliminary Summary of Best Management Practices (BMP)

Resource	Proposed Action Best Management Practices
Noise	New facilities will be designed and constructed to comply with AF Noise Level Reduction policy to reduce interior noise levels in residential and public use buildings to a Day-Night Average Sound Level (DNL) of about 45A-weighted decibels (dBA).
Air Quality	Construction contractors would apply water at the construction site to control fugitive dust emissions.
Geological Resources and Water Resources	Construction contractors would use erosion and sedimentation control techniques such as silt fencing and temporary diversions to minimize erosion and sedimentation during construction.
Cultural Resources	If any archeological artifacts were to be exposed during construction, the construction activities would cease, as required by federal regulations. Work would not resume until an archeological investigation is completed.

Note: More BMPs may be added as the study progresses.

Department of the Army
Corps of Engineers, Tulsa District
Planning, Environmental, and
Regulatory Division
Regulatory Branch
1645 South 101st East Avenue
Tulsa, OK 74126-4909

U.S. Fish and Wildlife Service
Director, Ecological Services Office
222 Sam Houston Avenue, Suite A
Tulsa, OK 74127

Mr. Michael Jansky
USEPA Region 6
Federal Assistance Section (6E-FF)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

U.S. Bureau of Indian Affairs
Mr. Merritt E. Youndeer
Muskogee Area Director
Federal Building and U.S. Courthouse
Muskogee Area Office
Muskogee, OK 74401

The Honorable Brad Henry
State Capital, Rm 212
Oklahoma City, OK 73105

Ms. Melvena Heisch
Deputy, State Historic Preservation
Officer
Oklahoma Historical Society
2704 Villa Prom, Shepherd Mall
Oklahoma City, OK 73107

Oklahoma Department of Environmental
Quality
Customer Assistance Program
1000 Northeast Tenth Street
Oklahoma City, OK 73152

Oklahoma Department of Wildlife
Conservation
Natural Resources Section
1801 North Lincoln
Oklahoma City, OK 73107

Metropolitan Planning Commission
Mr. Jim Henderson, Chairman
706 W. Maine
Enid, OK 73701

Mr. Chris Bauer
Planning Administrator
City of Enid
P.O. Box 1768
Enid, OK 73701

Garfield County Commissioners
Garfield County Courthouse
114 W. Broadway
Enid, OK 73701

Mr. Bruce W. Hoagland
Oklahoma National Heritage Inventory
Oklahoma Biological Survey
111 E. Chesapeake St.
University of Oklahoma
Norman, OK 73019

Mr. Robert Brooks
State Archaeologist
Oklahoma Archaeological Survey
111 East Chesapeake St.
Norman, OK 73019-5111

Mr. Albert Ashwood
Executive Director
Oklahoma Department of Civil
Emergency Management
P.O. Box 53365
Oklahoma City, OK 73152-3365

Mr. Gary Jones,
Acting Regional Director
Region IV – Federal Emergency
Management Agency
Federal Regional Center
800 N. Loop 288
Denton, TX 76209

Greater Enid Chamber of Commerce
210 Kenwood Blvd.
P.O. Box 907
Enid, OK 73702

Appendix C

Public Notice

The Draft Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) were made available for public review from September 23, 2005 through October 24, 2005. The below Notice of Availability was published in the *Enid News and Eagle* on September 23, 2005.

PUBLIC NOTICE

Notice of Availability
Draft Finding of No Significant Impact for the
Draft Environmental Assessment of Military Family Housing Privatization at
Vance Air Force Base, Oklahoma

VANCE AIR FORCE BASE, OKLA. – A Draft Environmental Assessment (EA) of Military Family Housing Privatization at Vance Air Force Base (AFB), Oklahoma has been prepared. Vance AFB is proposing to issue a Finding of No Significant Impact (FONSI) based on this Draft EA. The analysis considered potential effects of the Proposed Action on eleven resource areas: noise, land use, air quality, socioeconomics, environmental justice, cultural resources, hazardous materials and waste, infrastructure/utilities, earth resources, water resources, and biological resources. The results, as found in the Draft EA, show that the Proposed Action would not have an adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Copies of the Draft FONSI and EA showing the analysis are available for review at the following locations: Public Library of Enid and Garfield County, 120 W. Maine, and Vance AFB Library, 446 McAffrey Ave., Suite 24.

Public comments on the Draft FONSI and EA will be accepted through October 24, 2005.

Written comments and inquiries on the Draft FONSI and EA should be directed to Mark Buthman, 71 FTW/Dyn CEV, 140 Channel Street, Vance AFB, OK 73705, (580) 213-7344.

In addition, the following Privacy Advisory was published as part of the Cover Sheet to the Draft EA:

Privacy Advisory

Your comments on this Draft EA are requested. Letters or other written comments provided may be published in the Final EA. Comments will normally be addressed in the Final EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the Final EA.

Appendix D

Public Comments

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

SEP 2 6 2005

Colonel Christopher J. Thelen
Commander, 71st Mission Support Group
246 Brown Parkway, Suite 230
Vance AFB OK 73705-5036

Dear Concerned Citizen

Please find attached a copy of the Draft Environmental Assessment (EA) for Vance AFB Privatization of Military Family Housing. Vance AFB is proposing to issue a Finding of No Significant Impact (FONSI) based on this Draft EA. The analysis considered potential effects of the Proposed Action on 11 resource areas to include noise, land use, air quality, socioeconomics, environmental justice, cultural resources, hazardous materials and waste, infrastructure/utilities, earth resources, water resources, and biological resources. The analysis, as documented in the Draft EA, found that the Proposed Action would not have a significant adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Please provide your comments on this Draft EA. Public comments will be accepted through October 24, 2005. Letters or other written comments provided may be published in the Final EA. Comments will normally be addressed in the Final EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the Final EA.

Written comments and/or inquiries on the Draft FONSI and EA should be directed to Mr. Mark Buthman, CSC/CEV, 140 Channel Street, Vance AFB OK 73705, (580) 213-7344.

Sincerely

CHRISTOPHER J. THELEN, Colonel, USAF

Attachment:
Draft Environmental Assessment and
Finding of No Significant Impact
Military Family Housing Privatization (Vance AFB)

Co

R
6/20

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

JUN 14 2005

Colonel Bryan J. Benson
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance AFB OK 73705-5015

U.S. Fish and Wildlife Service
Director, Ecological Services Office
222 Sam Houston Avenue, Suite A
Tulsa OK 74127

Dear U.S. Fish and Wildlife Service

The United States Air Force is preparing an Environmental Assessment under the National Environmental Policy Act to assess the impacts of a proposal to privatize military family housing (MFH) at Vance AFB. The responsible agency for the environmental review process for this proposed action is the 71st Flying Training Wing of the Air Education and Training Command. The environmental review process is being conducted in accordance with the Council on Environmental Quality guidelines. In summary, the Air Force is proposing to transfer ownership of 230 MFH units and lease the land to a private developer for operation and maintenance over a 50-year period. The developer may demolish, construct, and/or renovate the MFH units as required to meet current Air Force standards.

Vance AFB recently demolished and reconstructed 54 MFH units that meet current Air Force standards. Therefore, the developer is unlikely to make any modifications to 54 of the existing 230 MFH units. The Air Force has designated the remaining 176 MFH units as inadequate. Due to the scope of renovations required to bring the 176 MFH units up to AF standards, renovation costs are projected to exceed 70% of replacement costs. Although renovations would upgrade the interior of the MFH units, the square footage would remain below AF standards. Adding onto the existing units would address the square footage issue. However, this approach would reduce the amount of space between housing units, which would have a negative impact on the neighborhood. Given the extent of renovations required and the need to increase the square footage, the developer will likely demolish and reconstruct the 176 inadequate units. As previously stated, the private developer would be responsible for maintaining and managing a total of 230 MFH units.

NO OBJECTION FINDING
The U.S. Fish and Wildlife Service does not object to implementation of the described action.
Date 7-8-2005
Consultation # N/A
Approved by C. O'Melia
U.S. FISH AND WILDLIFE SERVICE, TULSA, OK

Expeditionary Air Warriors Training Tomorrow's Leaders!

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Eastern Oklahoma Regional Office
P.O. Box 8002
Muskogee, OK 74402-8002

IN REPLY REFER TO:
Division of Environmental,
Safety and Cultural Resources

JUL 0 7 2005

Mr. Bryan J. Benson
Commander, 71st Flying Training Wing
246 Brown Parkway, Suite 224
Vance Air Force Base, Oklahoma 73705-5015

Dear Mr. Benson:

On June 20, 2005, the Bureau of Indian Affairs (BIA), Eastern Oklahoma Regional Office (EORO), received a notice announcing the preparation of an Environmental Assessment to assess the impacts of privatizing military family housing at Vance Air Force Base in Garfield County, Oklahoma. The EORO has no comments regarding the proposed privatization.

For your information, the project is within the jurisdictional area of the Southern Plains Regional Office (SPRO) which has been provided a copy of the public notice by this letter. As the SPRO may have environmental concerns regarding the privatization, it is recommended the Vance Air Force Base coordinate directly with the SPRO on any of its concerns. The contact person and address for the SPRO is as follows:

Mr. Dan Deerinwater
Regional Director
Southern Plains Regional Office
P.O. Box 368
Anadarko, Oklahoma 73005-0368

Thank you for contacting the BIA. If additional information is needed, please contact Mr. Bobby Coleman, Division Chief, Division of Environmental, Safety and Cultural Resources, EORO, at (918) 781-4660.

Respectfully,

Regional Director

U.S. Department of Homeland Security
FEMA Region 6
800 North loop 288
Denton, TX 76209-3698

FEMA

Region VI
Federal Insurance and Mitigation Administration

Public Notice Review

Re: United States Air Force
Environmental Assessment MFH Vance AFB, OK

- We offer the following comments:

FEMA is responsible for administering the National Flood Insurance Program which was established by Congress in 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

Executive Order 11988 establishes a decision-making process for agencies to avoid actions in or adversely affecting floodplains unless no practicable alternative exists. E.O. 11988 requires Federal agencies to avoid, to the extent possible, the long-and short-term adverse impacts associated with the occupancy and modification of floodplains and to void the direct or indirect support of floodplain development whenever there is a practicable alternative. If there is no practicable alternative, the Federal agency must minimize any adverse impacts to life, property, and the natural and beneficial functions of floodplains. The E.O. established the 100-year base flood elevation for all Federal agencies as the minimum standard.

FEMA's responsibility pertaining to actions being taken by other Federal Agencies under E.O. 11988, Floodplain Management, is one of a consultation role. This consultation role is largely guidance and assistance to Federal agencies in implementing the activities under E.O. 11988. FEMA has no oversight or regulatory authority over other Federal agencies as it pertains to implementing the Floodplain Management.

Reviewer

6-22-05
Date

If further information is required, please write to the address above or call (940) 898-5463.

Oklahoma Historical Society

Founded May 27, 1893

State Historic Preservation Office • 2704 Villa Prom • Shepherd Mall • Oklahoma City, OK 73107-2441
Telephone 405/521-6249 • Fax 405/947-2918

June 24, 2005

Mr. Mark Buthman
Deputy Environmental Branch Manager
CSC Civil Engineering Environmental Management
140 Channel Street, Suite 231
Vance AFB, OK 73705-5623

RE: File #1642-05; Vance AFB Privatization of Military Family Housing

Dear Mr. Buthman:

We have received and reviewed the documentation submitted on the referenced project in Garfield County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no known historic properties affected within the referenced project's area of potential effect.

In addition to our review, you must contact the Oklahoma Archeological Survey (OAS), 111 E. Chesapeake, #102, Norman OK 73019-5111 (#405/325-7211, FAX #405/325-7604), to obtain a determination about the presence of prehistoric resources that may be eligible for the National Register of Historic Places. Should the OAS conclude that there are no prehistoric archeological sites or other types of "historic properties," as defined in 36 CFR Part 800.16(l), which are eligible for inclusion in the National Register of Historic Places within the project area and that such sites are unlikely to occur, we concur with that opinion.

The OAS may conclude that an on-site investigation of all or part of the project impact area is necessary to determine the presence of archeological resources. In the event that such an investigation reveals the presence of prehistoric archeological sites, we will defer to the judgment of the OAS concerning whether or not any of the resources should be considered "historic properties" under the Section 106 review process. If sites dating from the historic period are identified during the survey or are encountered during implementation of the project, additional assessments by the State Historic Preservation Office will be necessary.

Should further correspondence pertaining to this project be necessary, the above underlined file number must be referenced. If you have any questions, please contact Charles Wallis, RPA, Historical Archeologist at 405/521-6381. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:bh

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101ST EAST AVENUE
TULSA, OKLAHOMA 74128-4609

June 27, 2005

Planning, Environmental, and Regulatory Division
Regulatory Branch

Mr. Mark H. Buthman
Deputy Environmental Branch Manager
CSC Civil Engineering Environmental Management
140 Channel Street, Suite 231
Enid, OK 73705-5623

Dear Mr Buthman:

Please reference your letter of June 14, 2005, regarding the proposed transfer of ownership (privatization) of military family housing units. The activity is located within the Vance Air Force Base, south of Enid, in Garfield County, Oklahoma.

The provided information does not indicate that a placement of dredged or fill material will be required, permanently or temporarily, into any "waters of the United States," including jurisdictional wetlands. Therefore, your proposal is not subject to regulation pursuant to Section 404 of the Clean Water Act, and a Department of the Army (DA) permit will not be required. Should your method of construction necessitate such a discharge, we suggest that you resubmit that portion of your project so that we may determine whether an individual DA permit will be required.

Although DA authorization is not required, this does not preclude the possibility that other Federal, State, or local permits may be required.

Your project has been assigned Identification Number 14698 Please refer to this number during future correspondence. If further assistance is required, contact Mr. Allen Ryan at 918-669-7618.

Sincerely,

for: David A. Manning
Chief, Regulatory Branch

PRELIMINARY JURISDICTIONAL DETERMINATION (JD)
INFORMATION SHEET

Preliminary JD's are not subject to appeal under the Administrative Appeal Process (AAP) of the U.S. Army Corps of Engineers (Corps). If you wish to challenge Corps regulatory jurisdiction for this project site, you may request an approved JD, which is subject to appeal under the AAP. If you desire to provide new information regarding this project site to the Corps for further consideration in reevaluation of the JD, it is recommended that any information be submitted prior to or accompanying your request for a final approved JD. Once the appeal process is underway for an approved JD, the AAP rules do not allow for submission of new information. You are not required to respond to the Corps regarding a preliminary JD if you concur with the determination.

For obtaining an approved JD, there are two options. The first option is to obtain the services of a consultant trained in the identification and delineation of wetlands and waters of the United States. A list of consultants in the area may be obtained from the Corps office. Any wetland delineation performed by a consultant must be completed in accordance with the 1987 Corps of Engineers Wetland Delineation Manual and supplemental guidance. The submitted wetland delineation should be accompanied by appropriate documentation and will be subject to review and validation by the Corps. A properly prepared and supported wetland delineation report provided by a consultant will expedite project review under the authority of Section 404 of the Clean Water Act. The second option is to request an approved wetland delineation from the Corps office. However, due to resource limitations and the size of the proposed development, the Corps cannot conduct the delineation of wetlands on these lands without a substantial delay for the permit applicant. If you desire the Corps to delineate the wetlands, expect a delay of at least 3 months for us to begin this service. To accomplish this task, you will need to provide notice to the Corps that you elect not to complete the delineation process through a private consultant. You should also provide written right-of-entry for the Corps to access the properties related to this project for wetland delineation purposes.

In addition to the above information, we also request site-specific construction plans that describe, at least in concept, any proposed excavation or filling activity on the subject site. Upon receipt of this information, an site investigation of the property may be conducted. The Corps will then provide a formal wetland delineation describing the extent or absence of wetlands on the property likely to be affected by the proposed project. In accordance with Federal mitigation policy, we may also recommend ways the proposal can be altered to avoid impacting aquatic environments and wetlands. The final wetland determination will be the official position of the Corps used to ascertain the subsequent need for a Section 404 permit for the proposed work, and as an approved JD will be subject to the AAP.

Contact:
Regulatory Branch
U.S. Army Corps of Engineers
1645 S. 101st East Ave.
Tulsa, OK 74128-4609

U.S. Department of Homeland Security
FEMA Region 6
800 North loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

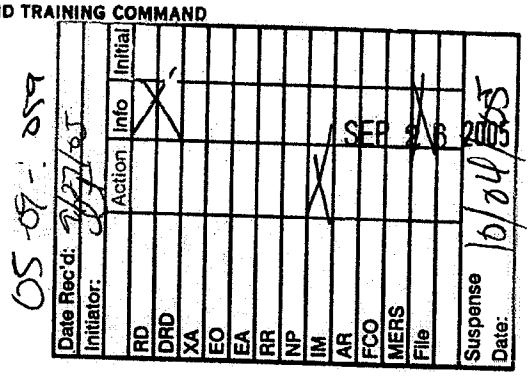
PUBLIC NOTICE REVIEW

☐ **We have no comments to offer** ☒ **We offer the following comments**

WE WOULD REQUEST THAT THE LOCAL FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT

REVIEWER MITIGATION DIVISION **DATE** 10-4-05

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND



Colonel Christopher J. Thelen
Commander, 71st Mission Support Group
246 Brown Parkway, Suite 230
Vance AFB OK 73705-5036

Dear Concerned Citizen

Please find attached a copy of the Draft Environmental Assessment (EA) for Vance AFB Privatization of Military Family Housing. Vance AFB is proposing to issue a Finding of No Significant Impact (FONSI) based on this Draft EA. The analysis considered potential effects of the Proposed Action on 11 resource areas to include noise, land use, air quality, socioeconomics, environmental justice, cultural resources, hazardous materials and waste, infrastructure/utilities, earth resources, water resources, and biological resources. The analysis, as documented in the Draft EA, found that the Proposed Action would not have a significant adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Please provide your comments on this Draft EA. Public comments will be accepted through October 24, 2005. Letters or other written comments provided may be published in the Final EA. Comments will normally be addressed in the Final EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the Final EA.

Written comments and/or inquiries on the Draft FONSI and EA should be directed to Mr. Mark Buthman, CSC/CEV, 140 Channel Street, Vance AFB OK 73705, (580) 213-7344.

Sincerely

CHRISTOPHER J. THELEN, Colonel, USAF

Attachment:
Draft Environmental Assessment and
Finding of No Significant Impact
Military Family Housing Privatization (Vance AFB)

OKLAHOMA DEPARTMENT WILDLIFE CONSERVATION FAX TRANSMITTAL SHEET FAX # 405-521-6535

TO: Christopher J. Theland, Col, USAF	FROM: Laura Glaser
COMPANY:	DATE: 10-21-05
FAX #: 580-213-6616	# OF PAGES (INCLUDING COVER) 2
PHONE #: 580-213-7519	SENDER'S PHONE #: 405 521-4616
RE:	

☐ URGENT ☐ PLEASE REPLY ☑ FYI

COMMENTS:

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

SEP 2 6 2005

RECEIVED
SEP 3 0 2005
NATURAL RESOURCES

Colonel Christopher J. Thelen
Commander, 71st Mission Support Group
246 Brown Parkway, Suite 230
Vance AFB OK 73705-5036

Dear Concerned Citizen

Please find attached a copy of the Draft Environmental Assessment (EA) for Vance AFB Privatization of Military Family Housing. Vance AFB is proposing to issue a Finding of No Significant Impact (FONSI) based on this Draft EA. The analysis considered potential effects of the Proposed Action on 11 resource areas to include noise, land use, air quality, socioeconomics, environmental justice, cultural resources, hazardous materials and waste, infrastructure/utilities, earth resources, water resources, and biological resources. The analysis, as documented in the Draft EA, found that the Proposed Action would not have a significant adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Please provide your comments on this Draft EA. Public comments will be accepted through October 24, 2005. Letters or other written comments provided may be published in the Final EA. Comments will normally be addressed in the Final EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the Final EA.

Written comments and/or inquiries on the Draft FONSI and EA should be directed to Mr. Mark Buthman, CSC/CEV, 140 Channel Street, Vance AFB OK 73705, (580) 213-7344.

Sincerely

NOT LIKELY TO ADVERSELY AFFECT ANY LISTED OR PROPOSED
The described action is not likely to adversely affect any listed or proposed species or their habitats.

Date: 10/20/05

By:

Attachment:
Oklahoma Department of Wildlife Conservation, Oklahoma City
Draft Environmental Assessment and Finding of No Significant Impact
Military Family Housing Privatization (Vance AFB)

Comments:
No T-E species, sanctuaries/refuges, or critical habitat present.

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Eastern Oklahoma Regional Office
P.O. Box 8002
Muskogee, OK 74402-8002

IN REPLY REFER TO:

Division of Environmental,
Safety and Cultural Resources

Mr. Mark Buthman, CSC/CEV
140 Channel Street
Vance Air Force Base, Oklahoma 73705-5036

OCT 14 2005

Dear Mr. Buthman:

On September 28, 2005, the Bureau of Indian Affairs, Eastern Oklahoma Regional Office (EORO), received a Draft Environmental Assessment (EA) from the Vance Air Force Base (AFB) concerning the Privatization of Military Family Housing. The EORO has no comments regarding the Draft EA.

For your information, the project is within the jurisdiction of the Southern Plains Regional Office (SPRO) which has been provided the notice by copy of this letter. As the SPRO may have environmental concerns, it is recommended the Vance AFB coordinate directly with the SPRO on any of its concerns. The contact person and address for the SPRO is as follows:

Mr. Dan Deerinwater
Regional Director
Southern Plains Regional Office
P. O. Box 368
Anadarko, Oklahoma 73005-0368

Thank you for contacting the BIA. If additional information is needed, please contact Mr. Bobby Coleman, Division Chief, Division of Environmental, Safety and Cultural Resources, EORO, at (918) 781-4660.

Respectfully,

Regional Director

Appendix E

Air Pollutant Emission Calculations

Proposed Action

Average Construction Equipment Usage Rates (hours)									Equipment Emission Factors (from AP-42, Volume 2 - Mobile Sources)				
	New Construction		Existing Facilities			Paving Operations							
Construction Equipment	Single Story (per 1,000 ft^2)	Multi-Story (per 1,000 ft^2)	Single Story (per 1,000 ft^2)	Multi-Story (per 1,000 ft^2)	Demolition (per 1,000 ft^2)	Asphalt (per 1,000 yd^3)	Gravel/Dirt (per 1,000 yd^3)	Concrete (per 1,000 yd^3)	CO (lb/hr)	VOC (lb/hr)	NO_X (lb/hr)	SO_X (lb/hr)	PM_{10} (lb/hr)
Backhoe	2.690	2.194	0.666	0.225	-	-		-	1.794	0.304	1.260	0.137	0.112
Blower	-	-	-	-	-	16.000		-	12.100	0.410	0.320	0.017	0.021
Bulldozer	1.183	1.387	0.372	0.106	-	6.154	6.154	16.000	1.257	0.425	3.840	0.463	0.406
Concrete Truck	7.528	3.764	0.753	0.376	-	-		203.262	1.794	0.304	4.166	0.454	0.256
Crane	10.334	15.545	1.894	1.040	3.000	-		-	0.675	0.018	1.691	0.143	0.139
Dump Truck	4.228	3.401	0.961	0.239	7.960	10.954	40.129	40.129	1.794	0.304	4.166	0.454	0.256
Front-end Loader	2.680	2.518	0.771	0.184	4.000	-	16.000	16.000	0.572	0.291	1.890	0.182	0.172
Paver	-	-	-	-	-	8.000		-	0.675	0.183	1.691	0.143	0.139
Roller	-	-	-	-	-	23.906	23.906	-	0.304	0.083	0.862	0.067	0.050
Scraper	-	-	-	-	-	4.800		-	0.151	0.052	0.713	0.086	0.061
Striper	-	-	-	-	-	16.000		-	12.100	0.410	0.320	0.017	0.021
18-Wheel Truck	28.080	30.055	5.268	2.484	-	-		182.166	1.794	0.304	4.166	0.454	0.256

Construction Equipment Emission Factors								
	New Construction		Existing Facilities			Paving Operations		
Pollutant	Single Story (lb/1,000 ft^2)	Multi-Story (lb/1,000 ft^2)	Single Story (lb/1,000 ft^2)	Multi-Story (lb/1,000 ft^2)	Demolition (lb/1,000 ft^2)	Asphalt (lb/1,000 yd^3)	Gravel/Dirt (lb/1,000 yd^3)	Concrete (lb/1,000 yd^3)
CO	86.288	84.385	15.907	6.907	18.594	427.979	96.146	792.713
VOC	14.400	13.588	2.742	1.129	3.639	22.763	21.455	140.825
NO_X	196.431	194.193	36.013	15.714	45.795	117.062	241.654	1,864.549
SO_X	20.968	20.522	3.844	1.670	4.771	11.515	25.581	203.523
PM_{10}	12.877	12.931	2.409	1.038	3.143	8.575	16.719	118.190

VOC Emissions from Asphalt Evaporation (AP-42)	
Density of Asphalt	68.56 lb/ft^3
Weight Percent of Asphalt which Evaporates	5 %

Notes: Cutback asphalt emission factors were used; however, emissions from hot mix asphalt are typically one order of magnitude less

Estimated Pollutant Emissions from Demolition Activities

New Construction Area	-	ft^2	No. Sites	176	
Renovation Area	-	ft^2	No. Stories	1	S/M
Demolition Asphalt Area[1]	1,065.0	ft^2	Depth	3	inches
Demo Gravel/Dirt Area[2]	959.0	ft^2	Depth	6	inches
Demo Concrete Area[3]	283.0	ft^2	Depth	10	inches
Demolition Building Area[4]	1,198.5	ft^2			
Miscellaneous Land Area	-	ft^2			

Site Preparation for New Construction

Total Area of Site	0.08	Acres (area disturbed by ground breaking)
Project Duration[5]	30	Days

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	4.0791
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	1.9610	0.3838	4.8299	0.5032	1.4916
Asphalt Paving Operations	0.3714	0.0198	0.1016	0.0100	0.0074
Gravel/Dirt Paving Operations	0.1503	0.0335	0.3777	0.0400	0.0261
Concrete Paving Operations	0.6093	0.1082	1.4332	0.1564	0.0908
Total Emissions	**3.0920**	**0.5453**	**6.7423**	**0.7096**	**5.6951**

Notes:

1: From the base map, it was determined that approximately 1.4 mile (7,500 ft) of existing road at a width of 25 ft will be demolished as a result of the project. This comes out to an average of 1,065 ft^2 per home site.

2: It was assumed that each home site has a yard that was equal to 80% of the gross square footage of each home (1,198.5 ft^2 x 80% = 959 ft^2).

3: From the base map, it was determined that approximately 7,500 ft^2 of existing drainage system will be demolished (Average of 43 ft^2 per home site). It was assumed that each home site has a driveway that was equal to 20% of the gross square footage of each home (1,198.5 ft2 x 20% = 240 ft^2).

4: Data was provided stating that total square footage of homes to be demolished is 210,933 ft2 (Average of 1198.5 ft2 per home for 176 homes).

5: It was assumed that it would take approximately 30 days to fully demo home and associated infrastructure.

Estimated Pollutant Emissions from New Home Activities

New Construction Area[1]	1,831.0	ft^2	No. Sites[5]	178	
Renovation Area		ft^2	No. Stories	1	S/M
Asphalt Area[2]	1,364.0	ft^2	Depth	3	inches
Gravel/Dirt Area[3]	1,465.0	ft^2	Depth	6	inches
Concrete Area[4]	421.0	ft^2	Depth	10	inches
Demolition Building Area		ft^2			
Miscellaneous Land Area	-	ft^2			

Site Preparation for New Construction

Total Area of Site	0.12	Acres (area disturbed by ground breaking)
Project Duration[5]	90	Days

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	17.9389
Emissions from Construction Equipment					
New Building Construction	14.0617	2.3466	32.0110	3.4169	2.0985
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
Asphalt Paving Operations	0.4811	10.4292	0.1316	0.0129	0.0096
Gravel/Dirt Paving Operations	0.2321	0.0518	0.5835	0.0618	0.0404
Concrete Paving Operations	0.9167	0.1629	2.1563	0.2354	0.1367
Total Emissions	**15.6917**	**12.9905**	**34.8823**	**3.7270**	**20.2241**

Notes:

1: Data was provided stating that total square footage of homes to be built is 322,263 ft^2 (Average of 1831.04 ft^2 per home for 176 homes).

2: From the base map, it was determined that approximately 9,600 ft (1.82 mile) of existing road at a width of 25 ft will be demolished as a result of the project. This comes out to an average of 1,364 ft^2 per home site.

3: It was assumed that each home site will have a yard that is equal to 80% of the gross square footage of each home (1,831.04 ft^2 x 80% = 1,465 ft^2).

4: It was assumed that approximately 9,600 ft^2 (1.82 mile) of the drainage sytem will be added (Average of 55 ft^2 per home site). It was assumed that each home site will have a driveway that is equal to 20% of the gross square footage of each home (1,831.04 ft^2 x 20% = 366 ft^2).

5: It was assumed that it would take approximately 90 days to fully construct a new home and associated infrastructure.

6: Total new homes will be 176, however, 178 was used to account for the new clubhouse.

Estimated Pollutant Emissions from Renovated Home Activities

New Construction Area	-	ft^2	No. Sites	1	
Renovation Area	-	ft^2	No. Stories	1	S/M
Asphalt Area	-	ft^2	Depth		inches
Gravel/Dirt Area	-	ft^2	Depth	6	inches
Concrete Area	-	ft^2	Depth	10	inches
Demolition Building Area	-	ft^2			
Miscellaneous Land Area	-	ft^2			

Site Preparation for New Construction

Total Area of Site	-	Acres (area disturbed by ground breaking)
Project Duration	-	Days

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	0.0000
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
Asphalt Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Gravel/Dirt Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Concrete Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Total Emissions	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Notes:

Maximum Development Alternative

Average Construction Equipment Usage Rates (hours)									Equipment Emission Factors (from AP-42, Volume 2 - Mobile Sources)				
	New Construction		Existing Facilities			Paving Operations							
Construction Equipment	Single Story (per 1,000 ft^2)	Multi-Story (per 1,000 ft^2)	Single Story (per 1,000 ft^2)	Multi-Story (per 1,000 ft^2)	Demolition (per 1,000 ft^2)	Asphalt (per 1,000 yd^3)	Gravel/Dirt (per 1,000 yd^3)	Concrete (per 1,000 yd^3)	CO (lb/hr)	VOC (lb/hr)	NO_X (lb/hr)	SO_X (lb/hr)	PM_{10} (lb/hr)
Backhoe	2.690	2.194	0.666	0.225	-	-		-	1.794	0.304	1.260	0.137	0.112
Blower	-	-	-	-	-	16.000		-	12.100	0.410	0.320	0.017	0.021
Bulldozer	1.183	1.387	0.372	0.106	-	6.154	6.154	16.000	1.257	0.425	3.840	0.463	0.406
Concrete Truck	7.528	3.764	0.753	0.376	-	-		203.262	1.794	0.304	4.166	0.454	0.256
Crane	10.334	15.545	1.894	1.040	3.000	-		-	0.675	0.018	1.691	0.143	0.139
Dump Truck	4.228	3.401	0.961	0.239	7.960	10.954	40.129	40.129	1.794	0.304	4.166	0.454	0.256
Front-end Loader	2.680	2.518	0.771	0.184	4.000	-	16.000	16.000	0.572	0.291	1.890	0.182	0.172
Paver	-	-	-	-	-	8.000		-	0.675	0.183	1.691	0.143	0.139
Roller	-	-	-	-	-	23.906	23.906	-	0.304	0.083	0.862	0.067	0.050
Scraper	-	-	-	-	-	4.800		-	0.151	0.052	0.713	0.086	0.061
Striper	-	-	-	-	-	16.000		-	12.100	0.410	0.320	0.017	0.021
18-Wheel Truck	28.080	30.055	5.268	2.484	-	-		182.166	1.794	0.304	4.166	0.454	0.256

Construction Equipment Emission Factors								
	New Construction		Existing Facilities			Paving Operations		
Pollutant	Single Story (lb/1,000 ft^2)	Multi-Story (lb/1,000 ft^2)	Single Story (lb/1,000 ft^2)	Multi-Story (lb/1,000 ft^2)	Demolition (lb/1,000 ft^2)	Asphalt (lb/1,000 yd^3)	Gravel/Dirt (lb/1,000 yd^3)	Concrete (lb/1,000 yd^3)
CO	86.288	84.385	15.907	6.907	18.594	427.979	96.146	792.713
VOC	14.400	13.588	2.742	1.129	3.639	22.763	21.455	140.825
NO_X	196.431	194.193	36.013	15.714	45.795	117.062	241.654	1,864.549
SO_X	20.968	20.522	3.844	1.670	4.771	11.515	25.581	203.523
PM_{10}	12.877	12.931	2.409	1.038	3.143	8.575	16.719	118.190

VOC Emissions from Asphalt Evaporation (AP-42)		
Density of Asphalt	68.56	lb/ft^3
Weight Percent of Asphalt which Evaporates	5	%

Notes: Cutback asphalt emission factors were used; however, emissions from hot mix asphalt are typically one order of magnitude less

Estimated Pollutant Emissions from Demolition Activities					
New Construction Area	-	ft^2	No. Sites	176	
Renovation Area	-	ft^2	No. Stories	1	S/M
Demolition Asphalt Area[1]	1,065.0	ft^2	Depth	3	inches
Demo Gravel/Dirt Area[2]	959.0	ft^2	Depth	6	inches
Demo Concrete Area[3]	283.0	ft^2	Depth	10	inches
Demolition Building Area[4]	1,198.5	ft^2			
Miscellaneous Land Area	-	ft^2			
Site Preparation for New Construction					
Total Area of Site	0.08	Acres (area disturbed by ground breaking)			
Project Duration[5]	30	Days			

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	4.0791
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	1.9610	0.3838	4.8299	0.5032	1.4916
Asphalt Paving Operations	0.3714	0.0198	0.1016	0.0100	0.0074
Gravel/Dirt Paving Operations	0.1503	0.0335	0.3777	0.0400	0.0261
Concrete Paving Operations	0.6093	0.1082	1.4332	0.1564	0.0908
Total Emissions	**3.0920**	**0.5453**	**6.7423**	**0.7096**	**5.6951**

Notes:

1: From the base map, it was determined that approximately 1.4 mile (7,500 ft) of existing road at a width of 25 ft will be demolished as a result of the project. This comes out to an average of 1,065 ft^2 per home site.

2: It was assumed that each home site has a yard that was equal to 80% of the gross square footage of each home (1,198.5 ft^2 x 80% = 959 ft^2).

3: From the base map, it was determined that approximately 7,500 ft^2 of existing drainage system will be demolished (Average of 43 ft^2 per home site). It was assumed that each home site has a driveway that was equal to 20% of the gross square footage of each home (1,198.5 ft2 x 20% = 240 ft^2).

4: Data was provided stating that total square footage of homes to be demolished is 210,933 ft2 (Average of 1198.5 ft2 per home for 176 homes).

5: It was assumed that it would take approximately 30 days to fully demo home and associated infrastructure.

Estimated Pollutant Emissions from New Home Activities

New Construction Area[1]	1,831.0	ft^2	No. Sites[5]	423	
Renovation Area		ft^2	No. Stories	1	S/M
Asphalt Area[2]	1,364.0	ft^2	Depth	3	inches
Gravel/Dirt Area[3]	1,465.0	ft^2	Depth	6	inches
Concrete Area[4]	421.0	ft^2	Depth	10	inches
Demolition Building Area		ft^2			
Miscellaneous Land Area	-	ft^2			

Site Preparation for New Construction

Total Area of Site	0.12	Acres (area disturbed by ground breaking)
Project Duration[5]	90	Days

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	42.6302
Emissions from Construction Equipment					
New Building Construction	33.4164	5.5766	76.0710	8.1200	4.9869
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
Asphalt Paving Operations	1.1432	24.7841	0.3127	0.0308	0.0229
Gravel/Dirt Paving Operations	0.5517	0.1231	1.3866	0.1468	0.0959
Concrete Paving Operations	2.1785	0.3870	5.1241	0.5593	0.3248
Total Emissions	**37.2898**	**30.8707**	**82.8945**	**8.8569**	**48.0607**

Notes:

1: Data was provided stating that total square footage of homes to be built is 322,263 ft^2 (Average of 1831.04 ft^2 per home for 176 homes).

2: From the base map, it was determined that approximately 9,600 ft (1.82 mile) of existing road at a width of 25 ft will be demolished as a result of the project. This comes out to an average of 1,364 ft^2 per home site.

3: It was assumed that each home site will have a yard that is equal to 80% of the gross square footage of each home (1,831.04 ft^2 x 80% = 1,465 ft^2).

4: It was assumed that approximately 9,600 ft^2 (1.82 mile) of the drainage sytem will be added (Average of 55 ft^2 per home site). It was assumed that each home site will have a driveway that is equal to 20% of the gross square footage of each home (1,831.04 ft^2 x 20% = 366 ft^2).

5: It was assumed that it would take approximately 90 days to fully construct a new home and associated infrastructure.

6: Total new homes will be 176, however, 178 was used to account for the new clubhouse.

Estimated Pollutant Emissions from Renovated Home Activities

New Construction Area	-	ft^2	No. Sites	1
Renovation Area	-	ft^2	No. Stories	1 S/M
Asphalt Area	-	ft^2	Depth	inches
Gravel/Dirt Area	-	ft^2	Depth	6 inches
Concrete Area	-	ft^2	Depth	10 inches
Demolition Building Area	-	ft^2		
Miscellaneous Land Area	-	ft^2		

Site Preparation for New Construction

Total Area of Site	-	Acres (area disturbed by ground breaking)
Project Duration	-	Days

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	0.0000
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	0.0000	0.0000	0.0000	0.0000	0.0000
Building Demolition	0.0000	0.0000	0.0000	0.0000	0.0000
Asphalt Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Gravel/Dirt Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Concrete Paving Operations	0.0000	0.0000	0.0000	0.0000	0.0000
Total Emissions	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Notes: